and as he had got a woman to look after her while he came for me. On arriving at the cottage I found her in bed, rather excited, and exclaiming that she was glad I had come as the pains were very strong, but seemed to make no progress, although she had been bad for two or three hours. I then made a vaginal examination, and found that there was not even an enlargement of the uterus, although the abdomen was distended. There was no evidence of any tumour. The abdomen was soft on palpation, except where she said she had a pain as I was examining her, where there was a distinct contraction of the abdominal muscles. I repeated that she had made a mistake, that there was no child and no labour; but she would not believe me, so I called her husband and told him in her presence that as there was no child to be born I was going home. Next day Mrs. B— was up and dressed, and could hardly even then believe that she had not been pregnant, although the pains and the distension had disappeared.

I saw her recently, and she told me that she had never menstruated again, that her impression of being pregnant was very real at the time, although she now knows that she was mistaken. Since then she has enjoyed good health, except for a slight attack of bronchitis last spring, and has shown no symptom of mental aberration. There was no hereditary predisposition to insanity.

Note on Mental Condition of a Girl who became a Mother at Fourteen Years of Age.—She lived with a married "aunt," who was childless. When visited before parturition she appeared unconcerned about her condition, rather vacant. During labour she was wonderfully quiet, taking everything as a matter of course.

After confinement she lay contentedly in bed at first, and did not take much interest in anything, but wished much to get up in three or four days. She took no notice whatever of the child, who was brought up on the bottle by the aunt, who took entire charge of the infant. The girl showed no maternal instincts at all, but was dull and indifferent.

There is no reason to doubt that conception occurred after criminal assault, a few months after irregular menstruation had begun. Her condition was not discovered until three months after the event.

An Attack of Epilepsy (Status Epilepticus) followed within six weeks by an Attack of Chorea, occurring in a Patient suffering from Acute Puerperal Insanity.

By C. C. EASTERBROOK, M.A., M.B., Assistant Physician, Royal Asylum, Edinburgh.

THE following case is worthy of record on account of its rarity, and of the interesting association of neuroses which were manifested by the same patient within a comparatively short period:

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R. B. B—, an unmarried shop-girl, æt. 22, was admitted into the Edinburgh Royal Asylum on August 19th, 1895, suffering from acute mania of the puerperium.

1. *Family history.*—Her parents were intelligent, respectable people of the working class. The father had always enjoyed good health, but a brother of his was melancholic, and committed suicide; another brother died at twenty of "heart disease," and several of the father's cousins were "consumptive." The mother was a martyr to rheumatism, and had suffered from a definite attack of rheumatic fever at twenty-one. A sister of hers had always been "weak-minded" (imbecile), and her father died of "paralysis." Hence, from the patient's point of view, there were hereditary tendencies to—

(1) Insanity (paternal uncle and maternal aunt).

(2) Paralysis (maternal grandfather).

(3) Rheumatism (mother, and possibly the paternal uncle, who died of "heart disease").

The tendency to phthisis (paternal half-cousins) was less obvious. There was no history of epilepsy or of chorea in the family.

2. *Personal history.*—Patient had always been an excitable, highly strung neurotic subject. She took no convulsions in infancy, but in her seventh or eighth year she for a time was subject to "dizzy turns," the precise nature of which it is now impossible to ascertain. She knew when they were coming, and would cry out, but she is said never to have lost consciousness or to have fallen during them. At fourteen she had a mild attack of chorea, brought on by a "fright in the dark;" it lasted between three and four months, and involved the face and limbs, and to some extent the function of speech. There had been no history of growing pains, and she never had (or has) been rheumatic.

Her psychical history since the onset of puberty at fifteen and during adolescence has been extremely bad. There have been four distinct attacks of insanity, for each of which she required to be sent to Morningside Asylum. There was mental disturbance at the first menstruation, characterised by taciturnity and dulness; and this was the commencement of the first of her four previous attacks, which were as follows:

First, at fifteen. *Stuporose melancholia of pubescence.*—Lasted three and a half months—from January to April, 1889. This attack is described in the asylum records as "a good case of melancholic stupor."

Second, at fifteen. *Acute mania of pubescence.*—Lasted four months —from July to October, 1889,—and was characterised by great forwardness and precocity, and a tendency to "show off" before the other sex.

Third, at sixteen. *Acute mania of adolescence.*—Lasted eight months —from December, 1889, to July, 1890. This attack was characterised by several monthly exacerbations, and finally by two months of stupor before recovery occurred.

Fourth, at nineteen. *Acute mania of adolescence.*—Lasted fourteen months—from July, 1892, to September, 1893. This attack was characterised by an initial five months of continuous mania, and then by a period of quiescence, and next by a relapse before final recovery. It is interesting to note that on the occasion of this, her fourth admission into the asylum, she is recorded for the first time to have a "systolic

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mitral bruit." There had been no rheumatic, or choreic, or cardiac symptoms complained of since her previous admission.

3. *Present illness* (August, 1895).—The patient during the previous two years had become loose and unsteady in her habits, and on August 8th, 1895, she gave birth to an illegitimate male child. The labour was difficult; instruments were used, and much blood was lost both at and after the birth, and during the succeeding week she fainted on three or four occasions when sitting up in bed in order to attend to the calls of nature. The lochia were profuse but "sweet." She nursed the baby for two days, but had to give this up on account of soreness of the nipples. On the eighth day of the puerperium—*i. e.* August 16th—morbid mental symptoms supervened. She became elated, excited, and restless, decorated her hair, smashed her watch, would not stay in bed or take food or go to sleep, and in three days was so much worse that it became necessary once more to send her to the asylum (on August 19th).

On admission she presented the typical appearances of puerperal acute mania, being hilarious, laughing, singing, whistling, chattering, full of flitting fancies, cheeky, blasphemous, obscene, tricky, mischievous, very restless, confused, incoherent, spitting right and left, destructive, and inattentive to the calls of nature. Bodily she was anæmic and feverish, the temperature being 101° F., and the pulse 144. The pupils were large and sluggish. There was a mitral systolic bruit sufficiently rough in character to make one suspect more than a mere functional origin, but its direction of propagation could not be ascertained at the time, owing to the patient's restlessness. The mammæ were full of milk, and were hard and lumpy. There was no pelvic tenderness, and, as normally happens by the eleventh day after labour, the uterus could not be felt above the pubes. The lochia were "sweet," though now somewhat scanty. The nurse was unable to obtain a specimen of urine for examination. The treatment adopted was confinement to bed till the feverishness passed off; a preliminary half-ounce dose of magnesium sulphate; free nourishment, mainly by milk and egg custards; vaginal douching once daily with 1 to 60 carbolic lotion; belladonna plasters, applied to the breasts after they had been massaged and softened; and sulphonal as required to control the insomnia and restlessness.

The mania continued unabated in severity for nearly a week after admission; then for two days the violent motor restlessness diminished somewhat, and this was followed next morning, on the nineteenth day of the puerperium—*i. e.* August 27th—by the sudden occurrence of a severe epileptic convulsion. I was sent for at once, as the patient was not known to be subject to fits. The fit by this time had ceased, but she was deeply unconscious and in a state of general muscular relaxation, and the conjunctival and pupil reflexes were absent. The sleeve of her strong cloth dress (with which she had been robed on account of her destructive tendencies) was found to have been pulled up over the right biceps, the arm being tightly constricted at the point, and below this red and œdematous. During the rest of the day the patient did not properly regain consciousness, owing to the recurrence of a severe epileptic fit every three or four hours. Since the onset of the

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first fit the mania had been entirely in abeyance, and had been replaced by the condition of *status epilepticus*. The convulsions were typically epileptic in character, the patient becoming at each fit suddenly and deeply unconscious, the eyes being turned strongly upwards, and the characteristic state of general tonic spasm being followed by clonic convulsions, which started at the lips and spread rapidly to the limbs and body generally. During the fit there was no wild talking or quasi-purposive throwing about of the limbs, as in hysterical convulsions. The only other condition which could reasonably be suspected to be present was puerperal eclampsia; but an examination of the urine, which was being passed copiously, and which it was now possible to obtain, proved such a diagnosis to be untenable. The urine had a specific gravity of 1023, was amber in colour, acid in reaction, and contained a healthy percentage of urea, and no albumen, blood, or sugar. Eclampsia gravidarum was thus not present, and this was all the more unlikely when we remember that, as a complication of child-bearing, eclampsia ([1]) sets in in more than half the cases during actual parturition, and in the remaining cases during the last two months of pregnancy or during the first two days of the puerperium, rarely, if ever, as late as the nineteenth day of the puerperium. Subsequent events confirmed the diagnosis of epilepsy, for, whereas a patient with eclampsia seldom survives more than twenty-five fits, this patient remained for eight days in the condition of *status epilepticus*, during which she had about a hundred severe fits and many lesser ones. On an average there were twelve severe convulsions in the twenty-four hours, and many slighter ones in addition. During the eight days of *status epilepticus*—August 27th to September 3rd inclusive—the patient remained comatose, feverish (temperature usually about 102° F.), and exhausted. Feeding was accomplished with great difficulty. At first sips of custard could be trickled down the throat between the paroxysms, but finally nutrient enemata had to be resorted to; and it was by means of medicinal enemata, each containing chloral hydrate 45 grains and potassium bromide 60 grains, that the condition was finally controlled. On the eighth day (September 3rd) of the *status epilepticus* three such enemata were given—*i. e.* 135 grains chloral and 180 grains bromide; but notwithstanding these large doses, there were twelve severe convulsions and many slighter ones. On the next day two similar enemata were administered, and no convulsions occurred, the patient gradually returning to consciousness. During the following week she regained strength, and the condition of post-epileptic mental confusion wore off, the mania now returning, but in a milder form than at first, with much less motor disturbance, the condition being essentially one of subdued mental exaltation and excitement, characterised by hilarity, constant chattering of nonsense, and playful tricky ways. This condition of mania continued, becoming gradually milder, during September and October, when another neurosis made its appearance. It was difficult to say, owing to the playful movements and mannerisms of the patient, when the chorea precisely began, but on October 14th —that is within six weeks of the cessation of the *status epilepticus*— distinct choreic movements were present, affecting the face and upper limbs. She made faces and grimaces, and moved about her head,

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shoulders, and hands in the short, jerky, involuntary, irregular manner characteristic of the disease. The mitral systolic bruit, which could now be listened to under more favourable circumstances, was distinctly propagated towards the axilla, indicating organic mitral disease. The chorea was mild in type, and disappeared under arsenic treatment in a fortnight. Meanwhile the mania was gradually subsiding, and by the middle of November she was regarded as convalescent, and was discharged recovered on January 11th, 1896.

[4. *Note on the subsequent history of patient.*—Patient again became pregnant, was married in April, 1897, and confined two months later. This time the labour was natural, and she nursed the child for four months, when melancholia set in, which in three weeks was succeeded by mania. She was readmitted into Morningside Asylum in November, 1897, suffering from lactational acute mania, was treated with mammary gland tissue, which had no apparent effect on the course of the disease, and, after passing through a melancholic phase during convalescence, was discharged recovered in June, 1898.

At the time of writing (November, 1899) I hear from her parents that she had her third baby in May, 1899, that she nursed it, but again "took the trouble," and was admitted into Middlesbrough Asylum, Yorks, at the beginning of the present month. Dr. Pope, of Middlesbrough, kindly writes to me that Mrs. R. B. B. M— is suffering from lactational subacute mania, with features strongly suggestive of hysteria, so that yet another neurosis must be added to this strange history.]

Pages of theory might be written on the strength of the above case as to the nature of insanity, epilepsy, and chorea, their pathogenetic relationships to one another, and their particular localisations in the common dwelling-house of the nervous system.

The following considerations, however, show the necessity of great caution in generalising from such a case.

1. *Child-bearing is one of the commonest causes of insanity in women*, accounting for 10 per cent. of all the cases, puerperal insanity claiming 5 per cent., lactational insanity 4 per cent., and gestational insanity 1 per cent.(2)

2. *Child-bearing is an occasional cause of epilepsy*, but the epilepsy usually begins during pregnancy, and this form is apt to recur in successive pregnancies and in time to become chronic.(3) Puerperal epilepsy is much less common and is less apt to recur. Puerperal *status epilepticus*, as the sole manifestation of epilepsy, must be considered as distinctly rare, for the "epileptic state" itself, according to Sir William Gowers,(3) is "very rare" in comparison to the frequency of the disease epilepsy.

When epilepsy and insanity are associated, the epilepsy, as

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is well known, is generally the forerunner of the insanity. This is epileptic insanity, which accounts perhaps for 9 per cent. of the total insanity in Britain,([4]) being somewhat less common in women than in men. Epilepsy consecutive to insanity is rare,([2]) although epileptiform convulsions are not uncommon in the course of insanity, both chronic and acute; witness especially the convulsions seen in the recent alcoholic insane.

3. *Child-bearing is an occasional cause of chorea*, but chorea gravidarum nearly always occurs during pregnancy, this form of chorea being usually very severe, apt to be complicated with delirium and mania, and often fatal.([5]) Chorea arising during the puerperium is rare.([6]) In the above case distinct symptoms of chorea appeared during the ninth week after labour, so that if the puerperium is limited to the period of six weeks following parturition the chorea in this case could hardly be called puerperal. However, the puerperium is stated by various authorities to last from one to two or even to three months after parturition, and whether the chorea in this case was to be regarded as a puerperal manifestation or not, the fact remains that the chorea was consecutive to puerperal insanity. Now when chorea and insanity are associated the insanity is nearly always consecutive to the chorea.([7]) This is choreic insanity, and it forms a very small percentage of the insanities. Rarely is chorea consecutive to insanity, although choreiform movements are not uncommon in the insane. When chorea occurs in the course of insanity the insanity usually disappears, the chorea remaining and becoming chronic.([7]) In the above case the mania was subsiding as the chorea appeared, and the chorea itself only lasted about two weeks.

Applying these considerations to the case of the patient in question, we recognise—

1. That she suffered from puerperal insanity, a common form of mental disease in women.

2. That during her illness she developed first epilepsy and then chorea, both of them rare conditions to arise during the puerperium and also (especially the chorea) as consecutive to insanity.

3. That the epilepsy was in the comparatively rare form of *status epilepticus*, and that the chorea was peculiar in not becoming chronic.

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Hence it would seem unjustifiable, in consideration of the rare developments of the illness, to form generalisations as to the nature and affinities of the above neuroses.

However, looking at the whole facts of the case, one may conclude—

1. That the patient had a bad family history.

2. That she herself was a very neurotic subject. This, in the present state of our knowledge, probably means a marked chemical instability in the nerve centres.

3. That the occurrence of acute mania or of epilepsy or of chorea in such a subject was not to be wondered at.

4. That the occurrence of the three diseases in succession within a short period in the same patient favours the view that the three diseases have a common site, namely, in the "highest level "([8]) of the cortex. If one carefully analyses the symptoms of acute mania, epilepsy, and chorea, it seems to me that the functions of the nervous system essentially at fault in these diseases are the mental and the motor. This favours the view that the three neuroses have their site in the pre-Rolandic portion of the "higher" cortex, rather than in the post-Rolandic cortex, which is more essentially mental and sensory in function.([9])

5. That in the absence of a definite pathology, the fact of the curability of the three diseases shows them to be essentially functional neuroses, dependent upon morbid molecular activity of the nerve centres and not upon gross nutritional or structural changes.

6. That in the absence of a definite proof of any autotoxic, toxic, or microbic agency, the ultimate cause of the three neuroses is an inherent chemical instability of the nerve centres, and a consequent tendency on their part to morbid chemical activity and functioning when they are brought under the influence of any "irritant" in the wide sense, the "irritant" merely acting as spark to powder. I do not agree with those ([10]) who hold the essential cause of chorea and epilepsy to consist in a microbic or toxic agency in the blood. The great incidence of these neuroses and of the insanities during the developmental period of life, especially during the period of maturation of the nervous functions, is strongly in favour of the view that the *fons et origo* of these disorders is in the cerebral cortex. It is the metabolism of the nerve centres, not

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the metabolism of the blood, which is the root of the evil of the "developmental" neuroses, and there is reason to believe that the toxines which have been found are an expression, not the cause, of the morbid chemical activity of the higher neurons.

(1) Hermanen, "Puerperal Eclampsia," Clifford Allbutt's *System of Medicine*, vol. vii, 1899.—(2) Clouston, *Mental Diseases*, 5th edit., 1898.—(3) Gowers, "Epilepsy," in Clifford Allbutt's *System of Medicine*, vol. vii, 1899.—(4) Savage, "Epilepsy and Insanity," in Hack Tuke's *Dict. of Psycholog. Medicine*, vol. i, 1892. —(5) Osler, *Principles and Practice of Medicine*, 3rd edit., 1898.—(6) Risien Russell, "Chorea," in Clifford Allbutt's *System of Medicine*, vol. vii, 1899.—(7) Ludwig Meyer, "Chorea and Insanity," in Hack Tuke's *Dict. of Psych. Med.*, vol. i, 1892.—(8) Hughlings Jackson, *Evolution and Dissolution of the Nervous System*, 1888.—(9) Ferrier, "Regional Diagnosis of Cerebral Disease," in Clifford Allbutt's *System of Medicine*, vol. vii, 1899.—(10) Macpherson, *Mental Affections* 1899.

Discussion

At Autumn Meeting of the Scottish Division of the Medico-Psychological Association.

Dr. Ireland hoped that, in the future, inquiry would be made as to the children born of this unhappy person, whose neurotic tendencies were so marked. He was puzzled to distinguish between epileptic and epileptiform convulsions, and between chorea, reported as being rare in insanity, and choreiform motions which are not uncommon. How were these terms to be used and understood?

Dr. Bruce thought that Dr. Easterbrook would have general support in stating that epilepsy and chorea are very closely connected. He remembered two cases, one starting with chorea and the other with epileptic seizure. Both ended in death. The first was a lad of about seventeen years of age. He became gradually weaker from loss of power, and choreic movements began in the right hand, extending to the arm, and later to the side of the body. Following upon these choreic movements a severe epileptic fit occurred, which seemed to clear the mental atmosphere. On the following day the movements began to affect the whole of the right side, and the patient had another fit, from which he never recovered. The other case was one of general paralysis. The chorea came on gradually, and afterwards became rapidly general. In three days a severe congestive seizure ended in death. He thought that there was still a great deal to be said in favour of the view that certain congestive states were due to poison in the blood, which, he believed, could, by inoculation of the blood, produce a condition of toxine poisoning in another person.

Dr. G. M. Robertson said he would refer to the treatment of *status epilepticus*. He thought that in chloroform they had got a means of actually stopping the convulsions in all these cases, and he felt certain that if chloroform had been used by Dr. Easterbrook long before the expiry of seven or eight days the convulsions would have ceased. In Jacksonian epilepsy there was a gradual march of the spasm. It started, say in the thumb, and gradually spread up the arm and shoulder, affecting the side of the head; then spread to the leg. In true epilepsy, on the other hand, the convulsions were supposed to be sudden and universal, perhaps more in one side than the other, but practically simultaneous. In one of the cases of *status epilepticus* which he had treated the patient was kept under chloroform only sufficiently deeply to prevent the convulsions being very severe. The convulsions then, instead of being sudden and universal, had a march exactly the same as the march of the convulsions in Jacksonian epilepsy. In true epilepsy the amount of discharge was greater and more sudden, and therefore they were not able to follow the march of the spasm, except in the manner referred to. This point had never been confirmed. It would therefore be very interesting to have further observations in similar cases treated by chloroform.

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Dr. KEAY said that he had tried venesection in the treatment of *status epilepticus*, as recommended by the late Dr. Wallis. He had bled two patients, and both had died very soon afterwards.

Dr. URQUHART said he had precisely the same experience. The bleeding certainly stopped the fits, but the fatal event followed within a few hours.

Dr. CAMPBELL CLARK said he had a case of *status epilepticus*, and the patient was bled about eighteen months ago, but was still alive. He had been interested in puerperal insanity for a very long time, and he had made very careful notes of all his cases; and he had been struck by the point which had been raised as to whether they had to deal with nerve-cell metabolism or with some other condition. Dr. Easterbrook thought there was no evidence of septicæmia. He was of opinion, however, that septicæmia was present much more often than they supposed. There was evidence of it in many cases in the shape of small boils or pustules scattered over the body, and especially over the buttocks. The poisoning of the blood in the great majority of these cases did not necessarily show itself by the appearance of abscesses which they could not always detect in the lungs or other internal organs. It might show itself externally and in other ways. In the case under discussion he would be inclined to think that there might be not only the nervous instability due to irregular metabolism, but also due to changes in the blood. The fact that cases of puerperal insanity with bad neurotic histories did not always develop epilepsy showed that there was some further explanation than had been given. It was most important that they should consider these two points in the possible explanation of chorea and epilepsy.

The PRESIDENT said that he had a case of post-puerperal insanity giving rise to trouble and anxiety. The week after insanity occurred serious epileptic fits supervened. These passed away, and having remained conscious for forty-eight hours she then lapsed into a stuporose condition. Was there a chance of her recovery? He had read Dr. Clark's series of papers with very great interest, and as they did not draw special attention to this point he took it that it was a very uncommon occurrence.

Dr. EASTERBROOK, in reply, said that he had recently seen the child, now a boy of four, who was born just before the illness described, and who so far had enjoyed good health. He thought that the terms "epileptiform" and "choreiform" should have a descriptive value only, without reference to the nature of the morbid processes described, otherwise confusion might arise. Thus "epileptiform" was generally applied to the convulsions characteristically seen in Jacksonian epilepsy. These were usually attended at first by consciousness, but in time often by unconsciousness, and then the cases were indistinguishable from true epilepsy. Sir William Gowers said the cases were then "not practically separable," the specific explosive brain habit being present in both. Epileptiform convulsions, however, might occur in other conditions than epilepsy. Similarly choreiform movements occurred in other conditions than true chorea, to which, however, they were probably allied. The prognosis in puerperal epilepsy was said to be not unfavourable. It was certain that products capable of producing convulsions had been obtained from the blood of epileptics, but it was possible that these poisons were formed in the diseased nerve centres, and that in *status epilepticus* a vicious toxic circle was established comparable to that which is said to exist in the congestive seizures of general paralysis. He had no experience of bleeding or of chloroform as remedies for the epileptic state. In reply to Dr. Campbell Clark he would say that there was no local evidence of sepsis in this case, and the temperature was only 101° F. He quite agreed with Dr. Clark that puerperal insanity often had the appearance of a poisoning, but he was not inclined to say that the majority of the cases were due to septic poisons. Most of the cases he had seen presented no signs of sepsis locally or constitutionally, and he therefore thought that the rapid involution of the uterus during the early puerperium (when puerperal insanity was most common) supplied a toxine which poisoned the unstable higher nervous centres. It was, however, good practice to use an antiseptic douche in cases of puerperal insanity to begin with.

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