twenty-five grains to the ounce; great and distressing thirst; a craving unsatisfied appetite; aromatic breath; preputial irritation and constipation; but without any pulmonary complication—began the treatment by ammonia and its phosphatic salt in the form above described in July last; and in December, though the proportion of sugar had only decreased to fifteen grains to the ounce, yet the nutritive functions had been so improved, that he had gained from nine to ten pounds in weight, and the more distressing symptoms had decreased. The health of a gentleman, 49 years of age, suffering from diabetes, which had not been detected till I examined the urine, became so much worse and with such serious complications, that it became necessary to advise his wintering in the south of Europe in the winter of 1867-68. In addition to the typical symptoms of diabetes, paroxysmal attacks of convulsions of an epileptic character, which had preceded the discovery of the sugar in the urine, and for which he had taken large doses of the bromide of potassium, were followed by serious indications of pulmonary disorder in the form of broncho-pneumonia, which rendered residence in a more temperate climate during the winter desirable. On his return in April of last year, the diabetic condition had rather increased than abated, although the cerebro-spinal and pulmonary symptoms had disappeared. In May, when the ammonia and phosphatic salt were commenced, the urine contained twenty-six grains to the ounce. The thirst was distressing, and the emaciation great. A moderately restrictive diet was enforced. In December last, after the treatment had been persevered in for six months, the specific gravity of the urine was 1028; it contained twelve grains to the ounce. Proportional to this decrease in the amount of sugar was the increase in weight of the patient. The thirst had decreased; and the physical debility which marked the earlier periods of the year was followed by powers of bodily exertion equal to that he had enjoyed before the decay in his health commenced; and, what was of more importance to him, the restless and fitful state of the nervous system was exchanged for powers of application and mental energy almost equal to the best periods of his life. In conclusion, I will venture to add one rule in the administration of these remedies essential to their beneficial action. It is, that they be uninterruptedly continued. It is only after long use that their remedial action becomes apparent. I will add no theoretic views as to the mode of action of ammonia and its salts. It is necessary, however, here to say that perseverance in the use of these salts is absolutely requisite. This observation is intended for the encouragement of those who are too apt to exchange one remedy for another, if the first selected be not quickly followed by remedial effects. Let the principle on which a given case is to be treated be first determined, then undeviatingly should that principle be followed, subject only to such contingent disturbances as cannot be foreseen.

CASE OF TWINS: FOLLOWED BY EPILEPTIC FITS AND DELIRIUM.

By EDWARD SANDWELL, L.R.C.P. Ed.

ON February 10th, at 1 P.M., I was called to see Mrs. S., whom I was engaged to attend in her confinement. She had gone the full period. She was having continuous but feeble pains. The membrane had broken early in the morning, the pains continuing regularly until 10.30 P.M., at which time I delivered her of a living male child, the head presenting. On making an examination, I found another bag of membranes containing another child; the head presenting as before. On rupture of the membrane, two or three sharp pains proved sufficient to expel another male child, but dead, and partly decomposed. In a few minutes I removed the placenta, quite distinct from each other. I left her doing thoroughly well at 11.30 A.M.; but, at 5.30 A.M. on the 11th, six hours afterwards, I was called hurriedly to her. I then found her in a fit of a distinct epileptic character. I ordered ice to her head, and the usual remedies. This first fit was followed by one every twenty minutes, without any conscious intermission for twenty-six hours. Then partial consciousness returned, but with it delirium, which lasted until the third day. I now prescribed a pill of four grains of calomel, and a quantity of opium; and also gave her a quantity of nourishment. She gradually improved, and took tincture of cinchona with ammonia every four hours. On the eighth day she complained of her breasts; they had filled rapidly and became somewhat nodulated. I ordered them to be rubbed with equal portions of brandy and sweet-oil, which relieved her after two applications. On the tenth day she took the child to suck, and has now had it for forty-eight hours, and both mother and child are doing as well as could be under the most favourable circumstances. No uterine symptoms have shown themselves. Mrs. S. had never had epileptic fits; she had been subject to fainting fits, but had been free from them during pregnancy. Her mother died in childbed. The whole of the family are highly nervous.

CASE OF CEREBRAL COMPLICATION OF ACUTE RHEUMATISM.

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AMONG the rarer events that occur in the course of acute articular rheumatism must undoubtedly be reckoned true cerebral complications, or those affections of the brain which, by their intrinsic gravity, acquire for the time being a substantive position. Dr. Fuller has discussed them at some length in the tenth chapter of his work; and one of Professor Trousseau's Clinical Lectures, headed "Cerebral Rheumatism," is devoted exclusively to their consideration; but, with these and perhaps one or two other exceptions, writers seem to have made their comparative infrequency an excuse for leaving the subject almost untouched. Recent observations with the thermometer, however, have imparted a new interest to these complications, an unusual elevation of temperature having been found frequently to coincide with their occurrence. Several such instances have been reported, the first, I believe, by Dr. S. Ringer, in the *Medical Times and Gazette* of October 5th, 1867. The following case, although it may not be so purely characterised as to be typical of this class, possesses one or two points of its own which seem to be worthy of notice.

M. J. W., a laundry-girl, aged 15, and looking fully that age; had menstruated, but not during the last six months. She was of sanguine temperament. Her mother was living and healthy. She had usually enjoyed good health, and had not before suffered from rheumatism, nor from any neurotic disorders. Her present illness commenced three days before admission (April 11th), after exposure to cold. The joints were attacked successively: the right elbow, at noon of the 11th; the left ankle on the same night; the left knee on the 12th; and the right knee and ankle on the 13th. There were concurrent insomnia and anorexia. She was brought into the Bath Royal United Hospital, April 14th, in a completely helpless state, having already a systolic murmur at the apex of the heart.—At 7 P.M. the temperature* in the axilla was 103 deg; pulse 128; respirations 32. She was ordered to be put into flannel, with cotton wool to the affected joints. The following draught was ordered to be taken every four hours: R potass. bicarb. ʒss; potass. nitr. gr. x; aq. camph. ʒj. M. She was directed to take eight grains of Dover's powder every night, and to have low diet, with a pint of milk and a pint and a half of beef-tea.

April 15th. She had passed a good night, but complained of pain in both knees, and in the left ankle and right wrist, which presented the usual appearances. She had also uneasiness at the cardiac region, where was a very distinct soft systolic apex murmur, but no friction-sound. Perspiration was profuse, neutral in its reaction. Temperature 101.8 deg; pulse 132, rather weak; respirations 36. The tongue was moist, with a brownish fur on the dorsum. The bowels were regular. The urine was of specific gravity 1.020, feebly acid, uncoagulable by heat and nitric acid. The treatment was continued.

April 16th. She slept well in the early part of the night. The pain was rather severe in the left hand, the other joints were better. Temperature 103 deg. Urine alkaline. The treatment was continued.

April 17th. She had no sleep. There was a good deal of pain in the back and in the left arm. Temperature 103.2 deg; pulse 124; respirations 36. A systolic murmur was heard at both the base and the apex of the heart. The draught was continued, but the powder was omitted; and she was ordered to have a minim and a half of liquor atropiæ injected subcutaneously into the left arm at bedtime.

April 18th. She slept several hours after the subcutaneous injection. She had most pain now in the right shoulder. Temperature 101.2 deg; pulse 116; respirations 44; urine acid.

April 19th. She had not much sleep, though she was not in much pain. Temperature 101.8 deg. The urine was very slightly acid.

April 20th. She had a good night, with scarcely any pain; and the arthritis had for the most part subsided. Temperature 104.4 deg; pulse 116; respirations 46. The cardiac murmurs were much as before. There was dulness at the bases of both lungs, greater at that of the left, where also bronchial breathing and obscure crepitation were heard. She had profuse perspiration, with copious military eruption over the trunk. The urine alkaline. Sinapisms were ordered to be applied to the ankles.

* With this exception, the daily observations of temperature were made about 10 A.M., by the Resident Medical Officer, Mr. R. Carter, M.B.

April 21st. She had not much sleep. Temperature 104.8 deg.; pulse 100; respirations 48. Vocal fremitus was absent at the left base, but breathing was more open here. The murmur at the apex continued, that at the base had disappeared. The urine feebly acid; chlorides present. She was ordered to have ten grains of Dover's powder at bed time, and to continue the draught.

April 22nd. She slept well; had no pain, no cough. Temperature 104.6 deg.; pulse 88; respirations 44. The urine was alkaline.

April 23rd. She slept well. Temperature 102.2 deg.; pulse 100; respirations 28. Urine alkaline.

April 24th. She slept well. She had been observed to be more than usually restless the last day or two, frequently getting her legs quite to the edge of the bed; and somewhat dull too. Temperature 105.4 deg.; pulse 116; respirations 32. At my visit (2 P.M.), she was found to be talking incoherently; and the conjunctivæ were injected*; there were no indications of headache. The apex-murmur was as before, that at the base had returned. The miliary eruption was still copious. Perspiration was neutral. She had no vomiting. The bowels were open; urine alkaline. She was ordered to take the draught twice a day only, and to have four ounces of brandy daily.

April 25th. She has been incessantly chattering and singing since the report of the previous day. It was a jocund delirium, without being obstreperous or violent. As the head-nurse, who saw her during the night, impressed by certain things uttered, thought alcoholism was concerned in the case, special inquiry was made into her previous habits; but the result was to completely negative this supposition. Temperature 105.6 deg.; pulse 132, compressible; respirations 28, suspicious. There were no signs of headache. The head did not feel hotter than other parts. The conjunctivæ were rather less injected; the pupils normal; the tongue was moist, she put it out when told. There was no vomiting. She took her nourishment pretty well. The urine was passed under her. There was no arthritis; indeed she seemed quite free from pain. As there was some doubt about the brandy agreeing, it was given to her but once or twice on the previous night, and then discontinued.

April 26th. Again she had no sleep, and the delirium continued. She was frequently throwing off the clothes, and attempting to get out of bed. It was found necessary in the night to place her in a separate room. Temperature 102.2 deg.; pulse 108; respiration 28. There was some subsultus tendinum at the wrists—less injection of the conjunctivæ. The base and apex murmurs were as before. The tongue was dry and furred; and she had sordes on the teeth. The bowels were open this morning; the evacuations were passed under her. She was ordered to have a hot bath (102 deg.); some brandy and water to be given her if at all exhausted. The draught was omitted; and she was ordered the following draught three times daily, with fifteen grains of citric acid, in a state of effervescence. R Potass. bicarb. gr. xx; ammon. carbonatis gr. v; spirit. chlorof. ℥ xv; syrapi aurantii ʒss.; aquæ ad ʒiiss, M.

April 27th. She continued without sleep, but was much quieter. She answered questions more rationally. The catamenia appeared this morning, but scanty. There was a slight return of arthritic pains in the right arm and shoulder. Temperature 100 deg.; pulse 116, failing in power; respirations 24. The tongue was sticky, with sordes on lips and teeth. The hot bath was repeated; and she was ordered to have Dover's powder and nitrate of potash, five grains of each, at bedtime; also to repeat the draught, and to have six ounces of brandy daily.

April 28th. She slept well all night, and was quite rational this morning; no pains. The catamenia had disappeared. Temperature 99.2 deg.; pulse 104, firmer; respirations 28. The murmur at the base of the heart was absent; that at the apex was as before. The tongue was clean. The urine, now passed regularly, was slightly alkaline. The draught was omitted; and she was ordered to take five grains of iodide of potassium daily, in an ounce of decoction of cinchona.

April 29th. She slept well the whole night; there was no return of delirium. Temperature 99.2 deg.; pulse 100; respirations 20. Pudding and vegetables were ordered to be added to her diet.

May 1st. She was doing very well. Temperature 98.6 deg.; pulse 104; respirations 20. She had a little cough. The urine was slightly acid.

Of the subsequent progress of the case, it may suffice to say that it was very slow and interrupted. Pneumonia soon recurred in a severe form, both lungs being simultaneously involved, with extensive hepatization of the left. Pericarditis, attended in its course with copious serous effusion, supervened on May 19th; and from time to time there were slight renewals of rheumatic arthritis and intercurrent boils. But on no occasion did her temperature rise again above 101.8 deg.; nor was there

any return of delirium. She was discharged, recovered from all but the mitral lesion, as indicated by the persistent apex-murmur, on July 7th.

On a review of the foregoing narrative, it may be observed:

1. That a well-marked and continuous delirium occurred for about eighty hours between the fourteenth and eighteenth days of an attack of acute articular rheumatism.

2. That, although the excess did not amount to more than 0.8 of a degree, the elevation of temperature at this period was greater than at any other period of the attack. Absolutely regarded, it approached that (106 deg.) of a case of Dr. Allbutt's (epitomised in the *Medical Times and Gazette*, April 4th, 1868), which is the only similar one, where the patient recovered, that I have been able to find recorded.

3. That the characters, positive and negative, of the cerebral complication here present being duly taken into account, the existence of meningitis appears inadmissible. At the same time, it is to be observed that cases occasionally occur where, with scarcely anything but delirium to betoken its presence, lymph, pus, and other products of meningeal inflammation, are discovered after death; and, upon this evidence, *rheumatic meningitis* is described as lacking most of the distinctive features of the ordinary forms of the disease. Attendant rise of temperature does not avail in this exigency; it is inconclusive. Dr. Ringer's cases, and the entire class which these represent, are a standing testimony to the fact. In fine, so scanty and valueless, as a rule, are the data upon which to do it, that Trousseau denies the possibility of diagnosing during life the meningitic variety of this complication; and remarks that it is an anatomical, and not a clinical, one. The important fact, however, supplied by necroscopic investigation, remains.

To state it in the words of the same authority,* "In the majority of *post mortem* examinations, nothing has been found, except occasionally some congestion of the pia mater. . . . In most cases, nothing at all is found, no fluid in the ventricles or in the arachnoid sac, no injection of the cerebral tissue." Hence a certain presumption arises in favour of the non-inflammatory nature of this complication in any given case; and, though exact knowledge as to prognosis is of necessity, under such circumstances, wanting, there seems reason to believe that this presumption is rather strengthened than otherwise by the fact of recovery ensuing; the recovery, too, being so speedy, so complete, so unaided by anything like special antiphlogistic treatment, as that which, *quoad* this complication, ensued here.

4. That, in regard to the rôle sometimes assigned to pericarditis in similar instances, there was no evidence whatever of this inflammation being present either at or about the period of delirium. On the other hand, when, three weeks later, it unequivocally declared itself (friction-sound ten days consecutively, etc.), delirium was entirely absent. Endocarditis, as denoted by the valvular murmurs, coexisted at both periods.

5. That, as to the influence exerted by other inflammatory conditions, the primary arthritis had already gradually subsided. Pneumonia supervened on the tenth day, and the temperature on the eleventh was 104.8 deg.; but, in the course of the next two days, it fell to 102.2 deg., with other indications of relief; and no exacerbation of pulmonary symptoms occurred on the fourteenth or following days of the delirium.

6. That the menstrual molimen, imperfect as it was, may have operated as an accessory cause in determining the event under consideration; but, inasmuch as no commotion at all parallel occurred at other epochs during the three months of the patient's stay in hospital, it is probable that its influence was not great.

7. That the rise of temperature, upwards of 3 deg. on the fourteenth day, was in advance of the occurrence of delirium; and the fall of the former, nearly 6 deg. (3.2 deg. before any improvement), preceded the complete cessation of the latter. So, in two of Dr. Ringer's cases, the heat suddenly rose 2 deg. or more before the head-symptoms came on; and in one under my own care, where pericarditis coexisted, and which proved rapidly fatal; while in Dr. Allbutt's, already referred to, "the temperature fell 3 deg. the day before a marked improvement, and before any change of pulse or of delirium indicated this amelioration." This observation, if confirmed by further experience, may perhaps furnish some clue to the true pathology of these cases.

8. That, in this instance, the alkaline treatment of acute rheumatism, commenced on the third day of attack, and carried out rigorously afterwards, though attended with pretty prompt relief to the arthritic symptoms, failed to protect against the outbreak of this and other grave complications.

* New Sydenham Society's Translation, vol. i, p. 529. Trousseau, without doubt, would have looked upon the present and similar cases as instances of the "delirious" form of his co-called "cerebral rheumatism". But, cogent as his reasoning is against the supposed uniformly inflammatory nature of these cases, the temperature observations since made seem to suggest some modification of his pathological doctrine respecting them.

* Conjunctival injection was observed in equal degree on two occasions long afterwards, when no other head-symptoms were present.