of the nerve centres, and perhaps also, I would add, of the nerves involved. It apparently corresponds with the transitory paralysis induced by physiologists in the lower animals, by passing a strong galvanic current through the spinal cord or motor nerves; or, in a minor degree, with the fatigue that follows unwonted and excessive voluntary muscular exercise.

5. It seems probable, from the fact that the severe pain which accompanied the convulsions was followed by ephemeral anæsthesia in the affected members, that the centre for sensation, and possibly also the corresponding sensory nerves, were in a state similar to those for motion. This association is analogous to what is observed in hemiplegia due to organic lesion, and, just as in it, the sensory defect was even of shorter duration than the loss of motor power.

6. It is worthy of being recalled that analogues of convulsions with excessive pain, followed by temporary palsy and anæsthesia, exist in the sphere of special sensation, as in a case recorded by me in the BRITISH MEDICAL JOURNAL (April 18th, 1874), in which, at the beginning of an epileptic seizure, a ball of red fire was seen by the patient, who for some hours afterwards was unable properly to recognise that colour. And I think we also see an analogous condition in the sphere of mind in the degree of dementia which ordinarily follows an attack of acute mania before restoration of full mental power.

ON THE TREATMENT OF PUERPERAL HYPERPYREXIA BY COLD.

By ALFRED WILTSHIRE, M.D., F.R.C.P.Lond.;

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DR. PLAYFAIR'S case of puerperal septicæmia, with hyperpyrexia, treated by the continuous application of cold (recorded in the JOURNAL for November 17th), opens up for discussion the practice of treating such cases by the rapid abstraction of heat, a remedy which has proved of inestimable value in other grave maladies accompanied by hyperpyrexia. As I am able to contribute particulars of two cases similarly treated by a method which appears to possess some advantages, I avail myself of the opportunity now afforded by Dr. Playfair's communication to lay them before the readers of the JOURNAL.

The cases were briefly narrated at a meeting of the South-Eastern Branch on December 9th, 1875 (see the JOURNAL for December 25th, 1875); but no particulars have until now been published.

In the autumn of 1873, I succeeded my friend and colleague Dr. Edis in the charge of the in-patients of the British Lying-in Hospital, an institution to which I was then physician. In giving the patients into my charge, Dr. Edis remarked that there was something wrong about the place; for none of the mothers had a temperature under 100 deg. Fahr., upon which I observed that I should feel compelled to close the hospital, if things continued in an unsatisfactory state. I regret to say that closure immediately became necessary, on account of the serious symptoms which arose in two newly admitted patients.

A day or two after I took charge, two healthy young women, primiparæ, were delivered in the hospital. Both were married, were aged respectively 23 and 26, and had fairly good labours, there being nothing abnormal in either case. I had the temperature watched, as has now for many years been my custom, and very speedily it attained high figures. There was no local condition in either case to account for this abnormal elevation of temperature, and it appeared to be only too clearly due to the unhealthy surroundings of the patients. Finding that quinine in large and repeated doses, intra-uterine irrigations, purges, and so on, were ineffectual for the reduction of the excessively high temperature, which in each case exceeded 106 deg.; and feeling persuaded that such hyperpyrexia was incompatible with life, if long continued, I had the patients packed round with vessels containing ice; hot water-tins, soda-water and other bottles, being filled with broken ice.

This dry cold method was selected because it obviated the necessity of removing the prostrate patients from their beds: a point which has always seemed to me to be of much importance in the treatment of hyperpyrexia by cold, since the patients for whom it is necessary are usually extremely exhausted. The temperature in each case was promptly reduced, but it rose again, after a variable fashion, when the cold was removed, and occasionally, I am bound to say, apparently in spite of it. Still, in the main, when it was carefully and assiduously applied, the effect of this method of reducing temperature was distinct, and the relief experienced by the patients was at times great and palpable. The only inconvenience arising from its use was the inability of the patients to sleep during its application. Chilling of

the skin appeared to be attended by increased vascular supply to the nervous centres, and consequent wakefulness. This might doubtless have been obviated if we had then had at command the efficient means we now have for cooling the head; viz., the ice-cap. As it was, sound sleep speedily followed the removal of the cold; the cerebral vessels being obviously relieved by the flushing of those of the skin. For many days, a weary fight was kept up with fluctuating success, the temperature occasionally remaining normal for several hours. Ultimately, one of the patients recovered, and the other, to my great regret, sank. Unfortunately, no necropsy was obtainable.

I believe that, could we have removed the patient whose case ended fatally from the building, she also would have recovered; for, again and again, her temperature fell to normal or near it, and she appeared to be on the verge of convalescence; she seemed, however, to get fresh doses of poison and relapsed accordingly. What tends to confirm this view is the fact that the other patient, who oscillated in like manner, only recovered on being removed, though at some risk, to her home at Croydon. In neither case was there any purulent collection or other abnormal condition, except that, in the one that ended fatally, there was at one time slight tenderness of the uterus. Both were what might be called ichorrhæmic cases; they were poisoned by their environments, the poison exerting in them powerfully phlogogenic effects. This is by far the most fatal form of "puerperal fever"; in my experience, it is much more rapidly and certainly fatal than where "puerperal fever" is accompanied by suppuration.

Some weeks afterwards, on attending a meeting of the South-Eastern Branch at Croydon as the guest of Dr. Alfred Carpenter, I found the surviving patient in the Croydon Hospital, whither she had been taken shortly after her removal to her home. Her appearance interested me greatly; for, from a plump blonde with plenty of fair hair, as she was when I first saw her, she had changed to a thin dusky-skinned woman with scarcely any hair. Her appearance showed plainly the severity of the struggle she had gone through: her epidermic structures generally had withered, as usually happens after *post partum* inflammations.

In both the cases just related, the skin was occasionally sponged with cold water. There was one noteworthy difference between them, inasmuch as only one of the patients perspired, and that was she who recovered. The other's skin was obdurally dry, and it is obvious that her power of radiating heat was correspondingly diminished. Efforts were made to induce sweating, but unsuccessfully. Her friends said they had never known her to perspire.

The advantage of applying cold to hyperpyretic patients without moving them is obvious. It is especially useful, for example, in acute articular rheumatism, and in cases of typhoid fever where perforation of the bowel from ulceration is dreaded, since movement from the bed to a bath, or *vice versa*, might precipitate bursting. This plan has already been attempted with partial success by wet packing and so on; but the packing around with vessels containing ice in addition to the wet sheet or sponging appears to be a ready and powerful means of abstracting heat without unduly disturbing the patient.

Besides its value in puerperal cases, as illustrated by Dr. Playfair's case and by the foregoing, I have also found it of great value after ovariectomy. During the past year, I used it in conjunction with another and similar method, also very valuable—the ice-cap—in, among others, two cases of ovariectomy at the West London Hospital. Both patients recovered, and I believe they owe their recovery in no small degree to the prompt abstraction and subsequent control of heat by the continuous application of cold.

My own observations enable me to concur fully in the opinion that the control of abnormally high temperatures by the application of cold is not only largely feasible, but that it is a therapeutic agent of immense value in a great number of cases. I mean that, by the rapid reduction of hyperpyrexia, not only do we remove excessive and dangerous heat, but also that probably we, at the same time, hinder its production: a result of enormous importance. I am, therefore, quite at one with those who consider that we ought not to wait for *foudroyant* manifestations of hyperpyrexia, but that alarm should be taken early, and efforts made, if possible, to suppress its genesis. There are doubtless still unused methods of doing this, and it will well repay those who are called upon to employ cold to devise means suitable to different cases. For example, where the patient can bear removal from the bed to a bath of cool water without risk, nothing can be better; but numbers of patients could only be so moved at great hazard, and then such measures as water-beds and cushions filled with cold water, vessels containing ice, ice-caps, sponging with cold water, wet packing, exposure to cold air, and so on, might be adopted. Wet packing may, in a modified way, be advantageously combined with ice-packing; and, as both are applicable without undue disturbance of the patient, they are

valuable auxiliaries in cases of marked prostration. Moistening the skin and allowing free evaporation not only favours the radiation of heat, but is also extremely grateful to febrile patients. I have adopted the combined plan with decided advantage.

I have more than once stated, at the Obstetrical Society and elsewhere, that quinine appears to exert much less influence over hyperpyrexia of ichorrhæmic origin than over that associated with, if indeed it be not dependent upon, suppuration; and I would venture to suggest the probability that the ichorrhæmic cases which show the highest temperatures and are the most rapidly fatal may be more favourably influenced, if not entirely controlled, by the assiduous application of cold than by the administration of quinine, valuable as that drug doubtless is in other cases. The brilliant results which have attended the administration of salicylic acid and its salts in acute rheumatism, usually a non-suppurative disease, lead one to hope for similar results in puerperal septicæmia unaccompanied by suppuration. I cannot forbear remarking that our present therapeutical resources encourage the belief that we are better able to cope with "puerperal fever" in its various forms than heretofore, more especially when their employment is not unduly delayed.

It only remains for me to say that the further admission of patients into the hospital was immediately suspended on the appearance of unfavourable symptoms in the two patients whose cases I have just related; and that, on inspection, quite enough was found to account for the unhealthy state of the building. Thorough measures were resorted to with marked success, and the recommendation that the hospital should be closed periodically for thorough cleansing and disinfection was adopted by the authorities. This plan has been attended by marked success; and I learn from the matron (Mrs. Freeman) that, at the present time, the condition of the patients is most satisfactory, although other metropolitan lying-in hospitals are not so free from mischief as could be wished. The acting matron (Mrs. Thompson) deserves a warm acknowledgment of the intelligent skill with which she attended to the two patients whose cases are related above.

TWO CASES OF HYPERPYREXIA TREATED BY THE COLD BATH.

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THE following cases may perhaps be considered worth publishing. Their publication has been delayed by the unsuccessful endeavour to recover the lost notes of a third case—one of typhoid fever—treated on similar principles.

CASE I.—I was summoned on May 15th, 1876, to see a patient who was under the care of Dr. Johnstone of Upholland, and it is with his consent that I publish the case. The patient was a married lady twenty-six years of age, of strumous aspect, suffering from an attack (the first) of acute rheumatism, with pericarditis. Her attack had commenced on May 8th, and she was first seen by Dr. Johnstone on the 10th, when the temperature was 104 deg. During the four following days, the temperature, when taken, ranged between 104 deg. and 105 deg. I saw the patient at 5 P.M. on May 15th, about the eighth day. The case was one of severe rheumatic fever, and the physical signs of pericarditis were well marked. The patient was restless, but free from delirium. The pulse was 120, and the temperature 104.2 deg. The urine was very acid. The treatment which had been adopted by Dr. Johnstone was the administration of bicarbonate of potash, with bark and opium, and four ounces of brandy daily. I recommended that the treatment should be continued; the dose of potash, however, to be increased, and that of opium diminished. I further advised that, should the temperature rise to 106 deg., the patient should be put into a bath at 95 deg., to be cooled down to 75 deg. or 70 deg. On the following day, at 1 P.M., Dr. Johnstone found the temperature 106.2 deg., accompanied with "furious delirium". Dr. Johnstone says: "I had her put into a bath (tepid), which was quickly cooled down to perfectly cold. (I cannot give you the temperature, but the water was cold from the pump.)" The patient was in the bath half an hour. The delirium sensibly decreased during this time. She slept a little the night after the bath, and, on the following day, she slept profoundly for two or three hours, and after this there was no delirium. At 10.30 P.M. of the 16th—viz., between eight and nine hours after the bath—the temperature was 102.6 deg. On the 17th, at 9 A.M., it was 103 deg.; at 3.30 P.M., 102.8 deg.; and at 10 P.M. 102.8 deg. Dr. Johnstone says: "Beyond this, I have no further record. I can only say that her progress towards recovery was

uninterrupted. She left home about the end of June for the seaside, feeling perfectly well, but with a slight systolic murmur."

CASE II.—E. W., a domestic servant, nineteen years of age, was admitted into the Liverpool Royal Infirmary, under my care, on November 21st, 1876, suffering from typhoid fever. She had been confined to her bed for about a week, but had not been under medical treatment. There had been slight looseness of the bowels, but no decided diarrhoea. She was ordered milk and beef-tea, and effervescent mixture, three times a day. On the morning of the 22nd, the day after admission, the temperature (then and afterwards taken in the axilla) was 101 deg., and in the evening 104.6 deg. On the 23rd, it was 101.8 deg. in the morning, and 104.6 deg. in the evening. Three ounces of brandy were ordered on this day. On the morning of the 24th, at 9.30, the temperature was 105.6 deg.; at 12.15, 106.4 deg.; and at 12.45, when I paid my visit to the hospital, it had risen to 106.8 deg. There was no delirium; but the patient was restless. Being unable to remain at the Infirmary, I gave directions that the temperature should be taken every quarter of an hour, and that, if it rose to 107 deg., the bath should be used. At 1.15, the temperature was found to be 107.2 deg., and the patient was put into a bath at 100 deg., which was gradually reduced to 75 deg. The patient was in the bath an hour and five minutes, and on removal her temperature was 99.6 deg. At 3 P.M., ten grains of quinine were given, and were vomited; at 3.35, five grains were given, and retained. The temperature began to rise soon after the bath, and at 5.15 it was 105.6 deg., and the bath was again used; the temperature of the water being 99 deg. at the beginning and 76 deg. at the end. The patient was in the bath an hour, her temperature on removal being 100.8 deg. At 6.30, five grains of quinine were given. The temperature again rose after the second bath, and at 8.15 it was 103.8 deg.; and the house-physician thought it best to use the bath again. The patient remained in it half an hour, the temperature of the water being 97 deg. at the beginning and 76 deg. at the end. On removal, the patient's temperature was 99.8 deg. She was put to bed, and I saw her immediately afterwards, and ordered five grains of quinine to be given every four hours. She slept during the night, and, at 9.30 A.M. on the 25th, the temperature was 99 deg. and the pulse 100. She had perspired freely, and had taken six doses of quinine, with a good deal of milk and beef-tea, and nine ounces of brandy, since the first bath. The quinine was now ordered to be taken every six hours. The highest recorded temperature of this day was at midnight; viz., 104.2 deg.; but it soon fell, and, at 9 A.M. of the 26th, it was 100.4 deg., and in the evening 102.4 deg. On the 27th, great pain was complained of in the left side; but no signs of pleurisy or any inflammation could be detected. The pain continued for some days, and was relieved by subcutaneous injections of morphia. The quinine was diminished, and the patient took nothing but milk and beef-tea, with a moderate quantity of brandy. There was no diarrhoea throughout, and only a few characteristic spots appeared. For a few days, the temperature remained very moderate, and there was no complication; but, on the evening of December 2nd, the temperature was found to be 104.8 deg., having risen from 99 deg. since the morning. The patient was carefully watched, and five-grain doses of quinine were given every six hours. The temperature soon began to fall, and, on the evening of the next day, it was 100 deg. With the exception of a rise of the temperature to 102.5 deg. on December 10th, and of 103.5 deg. on the 13th, the recovery was uninterrupted. She was discharged from the hospital on January 5th, 1877, the temperature having been normal for a fortnight.

NOTES ON A CASE OF MULTIPLE EXOSTOSES.*

By THOMAS JONES, M.B., F.R.C.S.,
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THE condition of several exostoses developed in the same individual is a sufficiently rare occurrence to induce me to place on record the following remarkable case.

Wm. S., aged 9, a native of Warrington, was admitted into the Children's Hospital on July 3rd, 1877. The immediate cause of the parents seeking advice was a large tumour springing from the posterior surface of the right leg about two inches below the knee. This mass, of irregular shape and firm consistence, was found to spring from both bones. The skin over the tumour was of normal colour and freely movable. A further examination of the boy resulted in the detection of a number of bony outgrowths, of various sizes and

* Read before the Section of Surgery at the Annual Meeting of the British Medical Association in Manchester, August 1877.