Owen Murphy: minimum of work consists of body-weight lifted through 6.83 miles.

Let us now compare this minimum with the work actually performed by him when suffering from diabetes, by the digestion of flesh-food and production of urea.

2. I have already shown that the work produced by the formation of 501.28 grs. of urea is 704 foot-tons, by calculation from the composition of proteine and urea. This result should be reduced in the proportion of 48,375 to 43,155, in order to obtain the work given by Professor Frankland's experiments. Making this reduction, we find that 500 grs. of urea correspond to 626.3 foot-tons of work, or 100 grs. urea to 125.26 foot-tons; or, in other words—

Every four grains of urea excreted correspond to five tons lifted through one foot.

Owen Murphy excreted, on an average, 1182 grs. of urea daily during nine weeks; which, by the foregoing rule, are equal to

$$1475 \text{ foot-tons} = \text{Murphy} \times x;$$

where x represents in miles the height through which the patient could be lifted by the work done per day; and is equal to

$$x = \frac{1475 \times 2240}{93.66 \times 5280} = 6.69 \text{ miles.}$$

This result is almost exactly equal to that already found as the minimum consistent with continued life, and explains in the most satisfactory manner the complete prostration of the patient, notwithstanding the consumption and digestion of more than double the usual quantity of flesh-food.

In corroboration of the foregoing conclusion, I may mention that Murphy's temperature was found to be constantly 2 deg. Fahr. below that of other patients (chronic) placed in the same ward, and, in other respects, under similar conditions. His unfavourable symptoms (so long as his powers of digestion were not impaired) were invariably alleviated by the free use of flesh-food and fat, the latter being, instinctively, preferred by him; so much so that, during the delirium that preceded his death for twenty-four hours, he raved incessantly about "fat, roasted fat, which the angels of Heaven were preparing for him."

I have studied many other cases of diabetes mellitus, and found similar results in all; but I feel it to be unnecessary to describe them, as one well ascertained train of phenomena, carefully observed and recorded, is quite sufficient to establish the order of nature.

Conclusion.

I have now, Mr. President and gentlemen, to apologise for the length of time during which I have spoken, and to thank you for the patience with which you have listened to me. I am well aware how much I am indebted to your kindness; for I laboured under two serious disadvantages in addressing you: in the first place, I had undertaken a task beyond my strength; and, again, my address is made shortly after you had, like myself, been charmed and instructed by the luminous, learned, and eloquent oration of Professor Rolleston. I felt confident, however, that I possessed one advantage that he did not; I was a stranger in Oxford, and believed that my faults in matter and style would be leniently criticised. In this expectation, I am happy to say I am not disappointed; and again I thank you for your kindness. Two other advantages I share with him, which have contributed to his address as much as to my own—a profound respect and reverence for all honest labourers in search of truth, whether they have preceded us by twenty years or by two thousand years; and an unwavering confidence and faith in the future that lies before the science of medicine. We traverse a sea, mapped with imperfect charts, carrying with us a sure guide in our compass and stars; but we cannot afford to neglect a single rock or shoal buoyed for us by the skill and care of those that have preceded us. Let us follow their example, and mark with conscientious care, for our successors, the dangers we ourselves discover and escape.

Assembled as we are, within the halls of the University of Oxford, the centre and heart of all that is intellectual and religious in the life of England; an University that borrows its accurate logic, as well as its refined ethics, from the lips of Aristotle; that reverences Euclid as the fountain and source of its elegant geometry; and sits at the feet of Homer, Pindar, and Æschylus, to learn its poetry; we need not fear that Hippocrates and Galen will ever want admirers and students; but the Oxford of to-day has taught us, what many did not anticipate, that she is equally ready and skilful, as she has proved herself to be in cultivating literature, to devote her vast intellectual energies to the encouragement and development of the natural sciences, based upon the solid, and only permanent foundation of mathematical research. The efforts made within the last few years by Oxford, to encourage within her walls the mathematical and natural sciences, have won for her the respect, and warmed towards her the hearts of all that search for truth in the study of

nature. Our brothers in Oxford, like the Athenians at Syracuse, have gone on board the fleet, while we watch them from the shore, sympathising in the sea fight; as they win, we shout; when they fail, we weep.

Long may the union of the far distant, but never to be forgotten past, with the living present, that now exists in Oxford, continue. No science, no profession, can benefit so much by it as that of medicine.

ON CEREBRAL EXCITEMENT FROM THE HEAT.

By JOSEPH BULLAR, M.D.,

Physician to the Royal South Hants Infirmary.

THE object of the following paper is to attract attention, not to severe cases of sun-stroke, but to symptoms of less severity which are by no means uncommon, though an unusual and novel affection in this climate, and are to be attributed to the same cause as sun-stroke—the excitement of the brain and the disturbance of its circulation by the long-continued heat of the weather. These cases are attended with pain in the head, giddiness, faintness, fear of dying, chilliness and shivering, and often with palpitation of the heart, irregular pulse, and distressing nervous and mental sensations and delusions, which, from their similarity, are liable to be mistaken for hysteria, or "nervousness", or "biliousness", whilst the real cause is overlooked.

Before relating instances of the milder affection, I will begin with a serious case of sun-stroke, which shows that the less severe cases are of the same family.

CASE I.—On July 16th, George Reed, a strong labouring man, aged about 35, was brought in a cart from a corn-field four or five miles off, in an unconscious state, to the Infirmary. He had walked into the town for provisions; and, when walking with his hat in his hand (as he afterwards described), felt the sun strike the top of his head, and fell down in a state of insensibility. On admission, he was maniacal, tearing out his hair. His head was immediately shaved, and ice in bladders constantly kept to the scalp. Mr. W. Shorto, the house-surgeon, also put ten grains of calomel on his tongue, followed in four hours by a black draught; and gave him salines with tartarised antimony every four hours. During the rest of the day and the night, he continued unconscious and delirious; but the next morning he was sensible, but complained of intolerable pain in his head. He told the nurse that his violence in the night was from the intense feeling of heat in his head making him anxious, in his delirium, to get into cold water. He referred the pain to his vertex. The leeches and purgative were repeated on the 19th; and as his pulse became slower and cerebral, and he still complained of pain in his head and sleeplessness, one grain of calomel, with one-sixteenth of a grain of tartarised antimony, was given every four hours for two days, with improvement. On the 22nd, as he could get no sleep, and still complained of pain in his head—lying, as he always did, on his back, with his neck stiff, knitting his brows, with closed eyes, and with a distressed, fretful expression—I ordered ten grains of bromide of potassium every four hours, which certainly, in many cases, acts as a cerebral sedative; and on the next day his expression was quite altered. For the first time, he expressed himself as feeling better, and from this time he gradually improved; but it was a fortnight before he could get natural sleep. He continued the bromide until August 5th, and was discharged on the 13th quite well, but looking as if he had recovered from a severe illness.

The protracted sleeplessness in this case, and in other slighter ones, in which the heat and pain in the head and vertigo indicated cerebral congestion, is in accordance with the views of Mr. Durham, who has so clearly proved by experiment and physiological reasoning that the brain is anemic, and not congested, during sleep—a doctrine which is in complete accordance with the sleeplessness of delirium tremens and other brain-affections, on the treatment and management of which it throws much light.

CASE II.—A lady, aged about 30, with two young children, strong, well-made, stout, and unused to illness, whilst walking in the street, a fortnight ago, was suddenly seized with pain in the head, giddiness, faintness, and a sensation as if she should die. She drove to my house on her way home, looking so ill that I hardly recognised her. I saw her once subsequently; but she was under the care of my friend Mr. Fowler. She was very ill for nearly a fortnight, with sleeplessness, disturbed nights, anxious fearful days; with occasional aggravated attacks of pain in the top of her head, which was hot; confused vision; vertigo; sickness; loss of power in her limbs, as if paralytic; palpitation of the heart; and irregular quick pulse, with a sensation of coldness of the body, and often a distressing anxiety, as if she were going to die. We agreed, besides quiet, cold to the head, and aperients, to give five grains of bromide of potassium every three hours, which she took for four or five

days, during which she anxiously craved for it, and expressed herself much relieved by each dose. At the end of that period, she relapsed into her old state; and Mr. Fowler prescribed very small doses of calomel, tartarised antimony, and morphia; and this relieved "like a charm"; but a short suspension was followed by the old symptoms, which were instantly relieved on resuming the medicine.

The formula was: Hydrar. chlorid. gr. iv; antim. tartar. gr. j; morphia hydrochlor. gr. iij; sacchar. purif. 3j. M. et divide in chartas xij. One-third of a powder was given every two hours for six times, and afterwards every four hours, and then reduced to a fourth part. She is now convalescent.

In this case, there can be no doubt that the brain was congested; and this was the source of all the nervous symptoms. For the patient was not a nervous subject; and on a very hot day, in good health, whilst walking, she was suddenly seized with giddiness and pain in the head; and the sleeplessness, the vertigo, as well as the relief from remedies adapted to an excited state of brain, indicated that the origin of the symptoms was cerebral. I dwell more on this, as, in many respects, the symptoms were what is usually called hysterical.

A lady between thirty and forty, after a railway journey, was seized in the night with severe pain in the back of the head and behind the ears, and the impression that she should die; and this pain in the head, nervousness, and alarm remained, with greater or less severity, for a month, and was aggravated by her return home by railway.

CASE III.—For the following very clear account I am indebted to the father of a delicate girl of thirteen, whom I once attended, but in this case did not see, as she was taken ill at a watering-place on the coast.

July 25th.—She was flushed, and complained of slight headache.

July 26th (Sunday).—Sharp headache came on during church, and went off partially in an hour or two.

July 27th.—She was in the open air on the beach, with the rest, most of the day, which was very hot. She went to bed with bad headache. At 10 P.M. her mother found her lying with her eyes open, and with a strange, unmeaning expression of countenance. She would not answer when spoken to. At 12 (midnight), she awoke with a violent headache at the top of the head towards the back and left side. The head was bathed with eau-de-Cologne and water for half an hour. She was crying and writhing in the bed with the pain all the time. She then said, "I am getting worse. I can't see; I don't know where I am; I can't remember anything; I shall soon die, I am sure." In a short time, she said, "The pain is just as bad, but I don't feel it so much." A medical man was sent for. He shook her, and tried to rouse her, believing it to be hysteria; gave her some sherry and water; applied hot bottles to the feet, mustard plaster to the back of the neck; but failed to give her relief. He ordered the cold applications to the head to be discontinued, which was not attended to. He showed her several things, but she could not say what they were; nor could she at that time even recognise her mother, though she seemed to distinguish voices. About 3 A.M., she was sick, vomiting watery matter *without* bile. At 4 P.M., the pain seemed to abate; and she suddenly fell asleep, and slept for two hours, waking with less pain.

July 28th.—She was in bed during the day. The pain was gradually subsiding.

July 29th.—She was up all day, but could not see perfectly, not rightly directing her hands when wanting to take up anything. She complained of optical delusions.

July 30th.—She woke at 7 A.M. with recurrence of violent headache, though not quite so severe. Ice was applied to the head for two hours; then sickness came on, and she suddenly fell asleep as before.

July 31st and August 1st.—She was pretty well.

August 2nd.—She had another slight attack. The symptoms were less marked, lasting about an hour, with sickness.

During the whole time, her appetite, usually very poor, was improved. There was no thirst; the skin was moist; the pulse slow and feeble, whereas her natural pulse is quick and irritable. In two or three days, her usual health returned.

CASE IV.—A medical friend informed me that, whilst driving in the sun, he was seized with pain in the back of the head, running down the spine, and with miserable faintness, which, however, soon went off; and a similar case of a lady has been related to me.

To recapitulate: it is important to recognise these sudden attacks of severe pain in the head, sleeplessness or disturbed sleep, faintness, and "anxietas", as an unusual and novel complaint, depending on cerebral excitement from the hot weather, and not to attribute the attendant nervous symptoms, such as palpitation of the heart, irregularity of the pulse, sense of cold, morbid sensations, and mental disturbances, to hysteria or nervousness, which they so much resemble, nor to biliousness; but to recognise and treat them as symptoms of increased cerebral action, by means calculated to allay increased action, rather than to

to stimulate it on the ground of weakness. Quiet, darkness, coolness, rest, with the head and shoulders raised when in bed; keeping the hair wet with cold water, eau-de-Cologne, and vinegar; unstimulating and light food, with tea, rather than cocoa or coffee; a bladder of ice kept to the head; with bromide of potassium in the milder cases, and, in more severe ones, leeches and antimony with salines, and even calomel and antimony; and, as in all head-cases, acting freely on the bowels,—are the means, according to the case, in which all would agree who recognise excitement of the brain from long-continued hot weather as the cause of the symptoms. Bromide of potassium, which acts as a cerebral sedative in epilepsy, certainly deserves a fair trial.

OBSTETRIC MEMORANDA.

[UNDER this head, we shall, from time to time, as materials come to hand from correspondents, publish records of cases remarkable in themselves, or illustrating points of interest in obstetric practice, therapeutic or manipulative. We shall probably in this way preserve from oblivion the notes of very many useful and instructive occurrences in private practice; for the great obstetric experience is that—for the most part hitherto unwritten—of the great body of general practitioners throughout Great Britain. We will only ask those who may forward cases for record, to relate them with the utmost brevity, and equally to condense any appended remarks.]

HEAD- AND HAND-PRESENTATIONS.

By W. ALLISON, Esq., East Retford.

IN addition to Dr. Tenison's letter in the number of July 4th, I may add, from my own practice, three other cases: the one in which the head followed the hand; the others in which the fingers' ends were in front of the ear. In each case, the pelvis was large, the uterine action strong, and the labours lingering; nevertheless, ordinarily sized children were expelled without the aid of artificial means.

A CASE OF CONVULSIONS: FLOODING: RAPID RECOVERY.

By MAXWELL REILLY, Esq., Castle Eden.

ON May 3rd, at 7 P.M., I was sent for to see Mrs. T., a little woman, aged 17, who had been in strong labour for six hours. The os was of the size of half-a-crown, rigid and hard. As she was a primipara, and bore her pains well, nothing was done until 11 P.M., when, as there was no advance, in spite of very strong and frequent pains, she was given small doses of tartarised antimony. The posterior circle of the os dilated rapidly, but the anterior circle remained perfectly unyielding. At 3 A.M. the membranes, which were very thin, ruptured; and a powerful pain forced the head, tightly covered by the anterior lips, into the perineum. The next pain forcibly dilated the obstruction, and with an epileptoid scream the woman went into a most violent convulsion, in which the right side of the face and body only were affected. The fit lasted for three minutes, and was succeeded by stertor and insensibility. The three following pains which expelled the child and the after-birth were each attended by a convulsion equally violent, and, as before, affecting the right side only. The pulse was 112, and full, and the right pupil widely dilated. I immediately bled her to sixteen ounces, applied sinapisms to the calves of the legs and nape of neck, and used the *douche* over the head and face. She became semi-sensible, and had no further fit, though the pulse remained at 112. Just an hour afterwards, very sharp hæmorrhage set in; but, warned by the "Churchill pulse," I had infusion of ergot in readiness, with which and cold applications the flooding was arrested after she had lost about three pints of blood, when the pulse fell to 90, and she appeared to recognise her mother. By 10 A.M., however, the pulse had regained its former hardness, and the convulsions, as violent as before, returned. She was again bled to twelve ounces, her head shaved, and a turpentine injection administered; but these measures were quite unsuccessful, as the fits continued, lasting longer, and with shorter intervals than previously. I then put her under the influence of chloroform in the middle of a convulsion with the result of immediately calming her, and she was accordingly kept anaesthetised for six hours. For the first four hours it was necessary to induce full anaesthesia, as a fit threatened whenever the chloroform was diminished, but subsequently slight anaesthesia only was employed as a precautionary measure. On recovering herself, she was quite sensible, and was given tartar emetic mixture with tincture of opium. On the fourth day she sat up, and the fifth day washed and dressed the child. She suffered from œdema during pregnancy, and at the third and sixth months her husband since states she had "a sort of fit like." The urine was not examined.