Reports of Societies.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

ANNUAL MEETING.

[*Held at Bath, September* 1864.]

The Relation and Special Application of Fat and Sugar as Respiratory Food. By THOMAS HAYDEN, M.D. The author believed that fat and sugar possess different values as food; that they undergo different transformations, and, during these transformations, subserve distinct purposes of economy; that the period of their retention in the body is the same; that they are not mutually convertible; but that ultimately they pass out of the body under the common form of carbonic acid and water, and are jointly concerned in the production of animal heat. After noting the mechanical purposes of adipose tissue, he alluded to the provision made in the fat deposited in the body, for the maintenance of animal heat during a certain period, under circumstances of total deprivation of heat-producing food. But, before deposited fat can become available for this purpose, it must undergo disintegration, or disassimilation, and be reabsorbed into the blood. Dr. Hayden did not deny that the adipose, like other tissues of the body, is constantly undergoing gradual molecular destruction; but what he desired to convey was that fat must be always in the first instance assimilated, and can, under no circumstances, be applied to the maintenance of animal heat before undergoing the twofold process of constructive and destructive assimilation. Amylo-saccharine substances, on the other hand, are immediately and directly passed off from the blood, and are never assimilated in the proper acceptation of the term. Of the starch taken in as food, however, a certain proportion escapes the action of the saliva, and is deposited in the liver, probably in the hepatic cells, whence it is drawn to supply heat when the amount of sugar in the food recently taken happens to be insufficient, or when the body is exposed to highly refrigerating influences. Having referred to the experiments of Pavy, Bernard, Sanson, Poggiale, and Roguet, Dr. Hayden said that he was engaged in a series of experiments, and, from the observations he had so far made, had arrived at the following conclusions. The amount of fat deposited in the body is regulated by the absolute and relative quantity of oleaginous and saccharine matter in the food taken; both substances, taken in a large quantity, cause excessive deposits of fat. If the fat taken be in defect, even though the sugar be in excess, no increase in the deposit of fat takes place, but rather a decrease; obviously in consequence of ordinary molecular absorption, to which the adipose, in common with other tissues, is subject, not being counterbalanced by assimilation. If the fat taken be in excess, whilst the sugar is insufficient to meet the immediate wants of the respiratory function, still the deposit of fat may not undergo increase, but the contrary; apparently because a portion of that already deposited must undergo reabsorption into the blood for the purpose of supplying heat. Fat is, therefore, as a heat-producing substance, only supplemental of sugar, which is the ordinary *pabulum* of respiration. Saliva, like gastric juice, is secreted in quantity strictly proportioned to the immediate wants of the system, and quite irrespectively of the absolute quantity of food taken; a certain proportion of the starch of the food, varying according to the quantity taken, and the necessity of respiration, escapes the converting action of the saliva, and is stored up in the liver. This liver-starch is being taken constantly back into the blood to supplement the respiratory elements of the food, and in the blood is converted into sugar, probably next into lactic acid, and finally into carbonic acid. Hence the presence of sugar, normally, in small proportion in the blood of the right side of the heart; hence, likewise, its presence in the right heart of animals fed exclusively upon meat, in whose portal blood not a trace of sugar is discoverable.

Meat as a Source of Entozoa. By T. S. COBBOLD, M.D., F.R.S. Referring first to beef and veal, he described the various species of tapeworm to he found in cattle. He also referred to the difficulty of detecting these parasites, even by a skilled veterinary surgeon; but added that all danger of injury to mankind, from their presence, was avoided by cooking the meat at a high temperature—say 212 Fahrenheit. Most of the tapeworms inhabiting sheep did not appear capable of living in the human body; still it was a wise precaution never to take meat underdone. Pork was the most injurious; and there was now no question that the measle inhabiting the pig was communicated in the pork eaten. If the poor would only abandon their semi-civilised habits of eating raw or half-cooked meat, the evil would soon cease altogether. A great variety of entozoa was to be found in game, but they were, for the most part, of innocuous classes. In fish they were more abundant than in either birds or mammals; but there was reason to believe that fish might be eaten either cooked or raw without danger to the consumer.

Vegetables, Fruits, and Water, as a Source of Entozoa. By T. S. COBBOLD, M.D., F.R.S. There was no doubt that entozoa were introduced with vegetable food. Small molluscs harboured parasites in prodigious quantities, and they were the source of one or more of the parasites that occasionally invaded the human form. These entozoa might be taken in water drinking, but they were much more likely to be taken from water-cress, or other vegetables of the kind. It was necessary with all vegetables that the greatest cleanliness should be observed in preparing them for the table, and care should be taken to avoid swallowing these small molluscs, which were very likely to escape observation. A large species of the tapeworm, discovered in Egypt, would, he was afraid, be brought to this countiy at some time from our colonies; and if ever it got place amongst us, it would be difficult of extermination. Eggs and living specimens had been found in this country, both in men and monkeys, but only to a very small extent. He was the first to discover it in the monkey. There was no evidence to show that any species of entozoa was derivable from fruit. A great many evils in children were charged to eating unripe food, but, as far as entozoa were concerned, that fear was entirely groundless; and if they should be so introduced, the chances were that the larvæ would be taken from the surface of the fruit. With regard to celery, cabbages, and all the ordinary market-garden vegetables, he might say that all decomposing animal and vegetable matter sustained entozoa, and the more filthy the water or liquid manure employed to secure the fertility of the garden, the more likely was a supply of entozoa to be taken with the vegetables grown upon the land. The most careful washing was, therefore, required. Parasitic larvæ might be found in water that was to all appearance perfectly pure; but speaking generally, it might be inferred that fresh spring water was perfectly innocuous. The same thing could not be said of water stored in large tanks in hot climates. The presence or absence of the larvæ of human entozoa in water

was dependent upon the place whence the supply came, and upon the condition of the water. The pork measle might be readily communicated to human beings in this way; and there was another species taken from water, the habit of which was to esconce itself in the brain, causing death. There was one kind inhabiting dogs which was often communicated to the human being. One-sixth of all persons who died in Iceland perished from a little creature so small that in its larval state it could scarcely be seen. No one need drink water impregnated with these entozoa. The danger would be got rid of if the water was always carefully boiled, filtered, or distilled; but a filter to be effectual ought not to pass anything larger than one one-thousanth of an inch. Sand and charcoal filters were of very little use. Paper filters should be employed. All entozoa not preserved for scientific experiments should be destroyed by fire. Beer, porter, etc., he believed perfectly harmless. Even though impure waters should have been employed, the boiling of the wort would be alone sufficient to destroy any number of parasites. As to unfermented drinks, such as ginger beer, cyder, and the like, there could not be perfect certainty. All must depend upon the source and the supply of water. In regard to wines, the same remarks were applicable. Alcohol added to water was sufficient to destroy the parasitical eggs; but he questioned whether the amount of spirit in our home-made wines was sufficient for the purpose.

Report on the Physiological Action of Nitrite of Amyl. By B. W. RICHARDSON, M.D. The author described nitrite of amyl as an amber-coloured fluid, smelling and tasting like essence of pears; and gave a classification of numerous experiments which he had performed with it. It arrested oxidation, and prevented the process of decomposition in animal and vegetable substances. The following was Dr. Richardson's summary of the effects of nitrite of amyl. 1. It is absorbed by the body, however introduced, whether by the skin, the stomach, the lungs, or by inoculation. 2. After its absorption, its effects are immediately seen on the heart and circulation. There is, in the first place, violent action of the heart, with dilatation of the capillaries, followed by diminished, but not extinguished, power of the heart and contraction of the extreme vessels. As an excitant of vascular action, the nitrite of amyl may be considered the most powerful agent yet discovered by the physiologist. 3. In animals whose bodies admit of its removal spontaneously, and whose circulatory and respiratory systems are simple, such as frogs, the nitrite suspends animation; and when the animals are placed under favourable circumstances for the process of recovery, they may recover. There is no other known substance that suspends animation in frogs for so long a period of time. In warm blooded animals, which are clothed in a skin less permeable, and in whose bodies the circulatory and respiratory systems are more complicated, the nitrite cannot actually stop the movements of respiration and circulation without destroying life. But even in these animals it can reduce respiration and circulation so extremely, that a condition precisely analogous to what is known as trance or catalepsy in the human subject, can be induced by it, and be sustained for many hours. 4. The nitrite of amyl is not an anæsthetic; by it consciousness is never destroyed, unless death is produced. 5. The effect of the nitrite on the organism is directed to the motive force, which it first wildly excites and then subdues. 6. The *modus operandi* of the nitrite appears to be by arresting the process of oxidation in the tissues. 7. Physically, the nitrite holds a place between the volatile bodies, such as chloroform or ether, and the solid bodies, such as opium and woorali; hence its effects are less evanescent than those arising from the volatile substances, and less destructive than those produced by the solid substances. In this lies the secret of the peculiar action of the nitrite. He described the pathological or diseased conditions produced by it; its effects as compared with other compounds of amyl, and numerous other substances; and the reason why it should so powerfully influence the circulation. He then put the question, whether with the facts now known we ought to deny the possibility of placing the body in such a condition that it may for some hours, or even days, assume the appearance of death? In catalepsy, or trance, we see such an appearance of death in a disease; and we have heard of the famous experiment of the Fakirs of India, in which they seem to hold life for a time in abeyance. Dr. Richardson thought that in catalepsy there was found in the body a substance which acted like the nitrite of amyl. He thought, also, it was possible that the Fakirs possessed a substance derived from the vegetable world that had the property of producing the same effects in a marked degree. In conclusion, the author discussed the question of the value of the nitrite of amyl as a remedy in the treatment of disease. He had not had time, practically, to try this point; but he suggested that the substance would probably be found of service in cases of sudden failure of the heart. He also believed it would prove serviceable in the treatment of tetanus; that it would, by its paralysing action on the voluntary muscles, check the tetanic spasms, and, by enabling the patient to live through the acute attack, would give time for the system to become relieved of the primary malady. As there was no known remedy for tetanus, Dr. Richardson urged the trial of the nitrite of amyl strongly. The whole of the amyl series required to be investigated physiologically; the inquiry promised to be attended with the most important results.

Preparations of Bromine. By G. D. GIBB, M.D. Bromide of lithium was prepared with the view of treating gout and rheumatism of the throat and neck. In small doses, it acted as a tonic gentle stimulant, and sometimes as a diuretic, and might be combined with other agents with advantage. The bromide of zinc he had found to relieve impaired nervous power; and he proposed bromide of lead as a soothing and cool local agent in certain inflamed states of the mucous membrane.

The Hour of Death in Acute and Chronic Disease. By ALFRED HAVILAND, Esq. The author had collected over 5000 cases of death, with the hour of death, and other circumstances recorded, which he had tabulated and exhibited on a large chart. By this chart, he showed that, in 1000 cases of death in children under five years of age, the periods of the greatest mortality took place during the hours between 1 and 8 A.M.; and that, in the succeeding hours between 9 and 12 P.M., the rate of mortality was at its minimum. He then compared these statistics with 2891 deaths from all causes; and the chart showed how remarkably the wave lines of death compared with those above. Deaths from consumption, although they showed a general resemblance in the wave line, yet between the hours of 4 to 8 A.M., showed a depression, when compared with the first four hours period. He contended that the tables on the chart proved the extraordinary mortality in the early hours of the morning when the powers of life were at their lowest ebb. He urged the necessity of feeding and stimulating the patient at their weakest hour, so as to tide them over a critical period, and, even if death be inevitable, to so support the patient that he might at least have a few hours more of life snatched from eternity to admit of his being able to carry out some neglected duty, pardon some enemy,

and see some beloved friend. He finally urged upon his professional brethren the high importance of teaching friends and nurses how to attend to those under their charge.

Correspondence.

PUNCTURE OF THE BLADDER *v.* PERINEAL SECTION.

LETTER FROM THOMAS PAGET, ESQ.

SIR,—I have delayed noticing the letter of Dr. Morris, published in your number of August 27th, until others who might wish to make observations on the subject had had time to do so.

I assure Dr. Morris that I receive his remarks in the spirit of indulgence which should ever attend the movements of science. I can also allow him to think "his patients in a better state than mine"; that is, if he can so think when he has read again, and with more attention, my cases and remarks published in the JOURNAL, of July 2nd, 1859.

He will then find that no "great annoyance and inconvenience was experienced by a person having an elastic gum catheter constantly protruding through the walls of the abdomen", simply because no catheter is used; there is only a tube and shield, the whole length of which is named as "about three inches."

In fact, the only projection from the body in my cases is that of the ordinary silver shield of a common bladder-cannula, which does not exceed half an inch, and is situated in the receding portion of the hypogastrium, where the clothing cannot roughly touch it. I am told by my patients that no inconvenience is felt from it. It is, then, Dr. Morris's *own cases* that must have suggested to him the protruding catheters; and their annoyance and inconvenience must have suggested them, too, as being felt by *my patients*. One of his "has worn the catheter ever since the operation, changing it every fourth or fifth day"; for the other, he says, "I replace the catheter every fourth day with a new one, as they become furred up and useless."

I submit, then, that his time for preferring the state of his patient to that of mine, though it may come, is not yet. Our respective patients will be upon an equality only, when he shall be able to report them, as I have mine, freshened in condition, erect, and free in gait; one of them "rejoicing in the opportunities business allows him of walking four or five miles, which he does perfectly free from pain." At present, he can only congratulate them upon—1, the blessing of relief from pain, not a small one to those who have suffered from retention of urine; 2, the advantage of being able to wear a catheter, protruding from the body, with "the great annoyance and inconvenience" of such protrusions; 3, the opportunity of cherishing the pleasing fiction that they are not micturating by the tube, but "at their pleasure, passing their urine through the penis" all the while.

But the two operations themselves have to be compared. The section, always viewed as severe, attended with after-peril, and uncertain in practicability and degree of success. The puncture now described, simple, certain, devoid of peril, and free from objection, for persons above 60. I must own that no sneer upon it, as "an easy and ready way of getting out a difficulty", will drive me from preferring the latter, and considering my patient as cured of the stricture he no longer feels or fears. The results of perineal section must be shewn far to outweigh in benefit those of puncture, and must very much exceed those of Dr. Morris's present description, to change my feeling. Perhaps, I ought to blush at a want of heroism, when candour draws from me the avowal, that though an "aspiring operator", I have never entertained any feeling short of the highest possible respect for that which I now find sneered at; viz., "an easy and ready way of getting out of a difficulty."

I am, etc.,
THOMAS PAGET.

Leicester, Sept. 25th, 1864.

THE DIET OF CHILD-BED.

LETTER FROM GRAILY HEWITT, M.D.

SIR,—Permit me to make a few remarks in reply to Mr. Pope's letter (*vide* BRITISH MEDICAL JOURNAL, September 24), criticising a paper recently published by me in the *Lancet*, on the Diet of Child-Bed.

I am sorry that the views I have advocated, as regards the dietary of women during child-bed, do not meet the approval of a gentleman who is pleased to speak of me so eulogistically; but I can do no less than defend my opinions, arrived at, as they have been, after mature deliberation, and supported by what I conceive to be sound argument.

I shall content myself with replying to the arguments adduced by Mr. Pope; and I hope yet to win him to my side of the question.

Mr. Pope, in his letter, appears to consider that the digestive organs of a woman recently delivered are in a state "more or less deranged"; and he states that the gravid uterus has, during the latter half of pregnancy, "so compressed the whole of the abdominal viscera, and more so those immediately connected with the digestive function, as to leave them in a state unfit for such diet" (the generous diet recommended by myself). May I ask Mr. Pope for the proof of this? Is it, or is it not, the fact, that women are, as a rule, capable of eating a good dinner, and digesting it easily and comfortably, up to the very hour when labour begins? If Mr. Pope's assertion were correct, the only logical conclusion would be that, during the latter half of pregnancy, the ordinary quantity of food could not be taken—a conclusion which I should imagine Mr. Pope is hardly prepared to adopt. I can assure him that, if he will make the experiment, he will find that the digestive powers are as good on the day following a natural labour as on the day before it, and that his patients will be thankful to be allowed, without delay, to recruit their exhausted forces, by taking the food to which they are accustomed. When the exhaustion is great, the digestive powers may be, as I have already remarked, weakened; and, in such cases, prompt administration of stimulants is necessary, for these supply the place of ordinary food.

"Generally" (says Mr. Pope), "before the secretion of the milk, fever must supervene"; and this fever is, Mr. Pope adds, "mainly regulated by the diet." I repeat, that "milk-fever" is, on the contrary, so far as my experience teaches me, very rare; while its importance is, I believe, altogether over-estimated. I agree with Mr. Pope, in considering that it is to be regulated by the diet; but I have no faith in a low diet for the purpose of preventing it. The fact that I have witnessed it so very rarely—and it is a fact—while I have been for some time in the habit of administering a liberal diet from the first, is, at all events, worth something as an argument; weakness and feverishness, I have generally seen, go together.

In conclusion, I would say, with Mr. Pope, *Magna est veritas, et prevalebit.*

I am, etc.,
GRAILY HEWITT.

Berkeley Square, Sept. 27th, 1864.