circumstances. The asylums whose mortality is below the average are the Hunwell (6·3), *Nottingham* (7·4), North and East Ridings of Yorkshire (7·8), Dorset (8·1), Devon (9), Lancaster (9.9), *Stafford* (9·9), Oxford and Berks (10·1), Salop and Montgomery (10·5), North Wales (10·6), Beds and Herts (10·6), and *Gloucester* (10·97); those with a mortality above the average are the West Riding of Yorkshire (21·2), Somerset (14·1), Suffolk (13·2), *Cornwall* (13), Surrey (12·1) Norfolk (12·2), *Leicester* (12·2), *Northampton* (12·1), Kent (12), and Cheshire (11·4).

Of eleven asylums opened between January, 1850, and January, 1852, little can be drawn from the statistics of recovery and mortality, beyond the fact already deduced from the statistics of the early years of other asylums, that the recoveries progress more or less rapidly from very small beginnings, according to the time taken for collecting the chronic cases; and that the mortality varies considerably, but presents, on the whole, an average much above that of old established asylums.

The mean mortality on these eleven asylums is 15·1 per cent. on the average annual number resident: those for the counties of Warwick, Wilts, and South Wales, have experienced an annual mortality of between 10 and 11 per cent.; whilst those for Middlesex at Colney Hatch, and for Lancashire at Rainhill and Prestwich, have exceeded the average. Those for Worcester, Derby, Hants, Birmingham, and Bucks, occupy the intermediate position.

It is a matter of considerable interest to endeavour to gain some insight into the many circumstances, directly or indirectly, tending to produce the great variation in the results of treatment at the different institutions from which the averages here specified are obtained; when we find a mean of 42·9 per cent. of recoveries on admissions deduced from statistics varying between 28 and 51½, and an average mortality of of 11·27 from numbers ranging between 6·3 and 21·2, and when we consider that these results are obtained from asylums erected for a similar object, conducted under similar supervision, and with the same general publicity attached to their proceedings; and when there is no reason to impugn the medical skill of which any one has the benefit,—though, certainly, much might be said of the small amount of this doled out to some by the very false economy of managing committees,—it must be evident that many are influenced by special advantages or disadvantages, some of a comparatively trivial, others of a more important nature: the knowledge of which would tend to very beneficial results, in displaying what is radically good or bad in the organization and management of public asylums in this country, and in affording practical data for the introduction of many valuable alterations into some of them.

I would venture to suggest to the consideration of the Association of Medical Officers of the Insane the advantage that might accrue from drawing up a series of leading questions connected with this subject, and seeking full replies to them from the Superintendents of the different asylums. A ready means would be presented by the pages of their own Journal for the propagation of the information thus elicited.

On Prolonged Fasting, with reference to a particular Class of Insane Persons, by JOHN MANLEY, M.D., *Medical Superintendent of the Hants County Asylum, late Assistant Medical Officer of the Devon County Asylum, from whence the Cases are quoted.*

Most of the well-authenticated instances of long-continued fasting on record are such as have arisen from physical incapacity to take food into the stomach, or to retain it for the support of the system when taken, —from a peculiar condition of the mind, which induces in the individual a disregard or disinclination for food,—or, lastly, from accidental circumstances, as shipwreck, burial in mines, and such like. Those cases which have their origin in either of the two former causes, or in a combination of them, are important to the medical attendant on the insane, inasmuch as they not unfrequently occur in persons under treatment in lunatic asylums, are sources to him of great trouble and anxiety, and are fraught with considerable danger to the life of the patient under his care.

As instances of the maintenance of life under a partial or entire deprivation of food, the results of accident are interesting, because they teach us the enduring powers of nature, and assist to guide us in the treatment of the former classes. I have selected a few of them. In 1795 seventy-two shipwrecked sailors were obliged to take shelter in the shrouds of a vessel, while the hull was covered by the sea; they all survived five days, and fourteen of them twenty-three days, without a morsel of food; but they were enabled to catch a few drops of rain as it fell. In 1768 Capt. Kennedy was shipwrecked, with twelve companions, in the West Indies; the small quantity of food they were enabled to preserve was entirely consumed in seven days, amidst extraordinary distress: during the next eight days, though in absolute want of food and drink, and exposed in an open boat, the whole survived; but after obtaining relief some of them perished. Capt. Bligh and eighteen men of the *Bounty* sailed a great portion of 3,600 miles in an open boat in stormy seas, on an allowance of one and a quarter ounce of biscuit daily; and sometimes when a bird the size of a pigeon was caught it served for a meal to the whole crew. Sir William Hamilton, in an account of an earthquake which devastated Sicilly in 1783, relates that he saw two girls who were miraculously preserved in the ruins of a house; one had survived eleven entire days, and the other six, totally deprived of food.

The general effects of long fasting, from whatever source it may arise, as observed by Gmelin, Tiedemann, Magendie, Stark, and Chossat, are debility, gradually and constantly increasing loss of strength, wasting of the tissues, particularly the adipose and the muscular, derangement of the digestive apparatus, so that the system is not nourished by food subsequently taken, which food is often soon vomited, or passed off indigested by diarrhœa, a peculiarly fœtid state of breath, dry harsh skin, a tendency to bruise on very slight pressure, and a loss of animal heat: indeed, M. Chossat dwells particularly on the marked diminution of temperature which he finds to take place in starved animals, and infers that "the cessation of life is the consequence of the cooling of the body below

https://doi.org/10.1192/S2514990300001257 Published online by Cambridge University Press

what is sufficient for the purposes of life;" the mental faculties are not at first affected, but at a later period it is not unusual to notice alternating paroxysms of excitement and depression.

Dr. Beaumont observes—"There appears to be a sense of perfect intelligence conveyed from the stomach to the encephalic centre, which in health invariably indicates what quantity of aliment is naturally required for the purposes of life; which, if noticed and properly attended to, would prove the most salutary monitor of health, and the effectual preventive of disease." The feelings of hunger, limited to the digestive organs, are a sense of pressure, motion, contraction, qualmishness, borborygmi, and finally pain. But any violent emotion, or the concentration of ideas on one particular object, is capable, for a time, of rendering us regardless of these monitions. Again, there is a state of the digestive organs, in which they either do not secrete the fluid destined for the solution of the aliment, or they are in such a condition of irritability or atony that, by the mechanical irritation of the food, painful sensations and irregular motions are excited, and this readily accounts for the unwillingness of dyspectic persons to take a proper amount of aliment. When we consider that these causes may both operate in the same individual to prevent the proper reception and assimilation of food into the system, how natural is it for us to conceive that such, occurring with a diseased mind, may lead to the obstinate refusal of food.

Perhaps it will not be amiss to mention some of the observations that have been made by experimenters on the quantity of food necessary for the support of life. It is recorded of Cornaro that he lived for fifty-eight years on twelve ounces of food, principally vegetable, and fourteen ounces of light wine, daily. An avalanche overwhelmed a village in Switzerland, and entombed three women in a stable, where there was a she goat and some hay: they survived thirty-seven days on the milk afforded them by the goat, and were in perfect health when relieved. Dr. Willan mentions that in 1786 a young man, a religious visionary, supposing himself labouring under some inconsiderable complaints, thought to operate a cure by abstinence. He lived on from one half pint to a pint of water and the juice of two oranges daily for sixty days, employed in reading and writing, taking no exercise, and sleeping little. On the sixty-first day he was seen by Dr. Willan; he was then reduced to the lowest state of existence, and although his eyes were not deficient in lustre and his voice entire, he exhibited the appearance of a skeleton on which the flesh had been dried, and his physical decay was attended with manifest imbecility. With proper regimen he recovered in a few days so far as to be able to walk across the room, and his religious delusion vanished; but on the seventh day from the commencement of this system his recollection failed, and he expired on the seventy-eighth day from the beginning of his abstinence. This case is unusually interesting, as orange juice, the *only* nutriment taken during sixty days, contains no nitrogen.

Dr. Carpenter met with a case in which the patient had fasted fifteen days before being compelled to take nourishment. The observations of Stark, who died a martyr to his enquiries, must not be disregarded. When he used twenty ounces of flour, and four ounces of oil or suet, four pounds of water, and twelve drachms of salt, he found he enjoyed his food, was perfectly well, and increased in weight at the rate of fifteen ounces a day. When he added four ounces to the quantity of flour, and omitted the oil, he lost weight at the rate of seventeen and a quarter ounces a day. When he lived on animal food entirely he lost weight at the rate of eight ounces a day. In his last course of experiments, using from twenty-eight ounces to two pounds of bread, and from four to twelve ounces of honey, he was seized with that illness which caused his death within a week.

The following cases, bearing on the refusal of food by insane patients, have fallen under my own observation during my official connection with the Devon County Asylum, and are recorded from notes taken at the time.

Case 1. W. S, æt. 55. Admitted 13th Dec., 1853. Lived in the same service for twenty years; but an examination of accounts having recently taken place in consequence of his master's death, the patient was discovered to have overdrawn his wages, a circumstance which appeared to have greatly preyed on his mind, so that three weeks before admission he became insane. He was exceedingly suicidal, and had attempted self-destruction by hanging. He did not sleep at night, refused food, and would not converse, nor answer questions. Expression haggard, pupils equal, head hot, skin harsh, tongue white, no abdominal tenderness, but kept exclaiming "Oh! Oh!" "Bursting!" His breath was very fœtid, the vessels of the head were full and tortuous, and there was twitching of the zygomatic muscles. Subsequently he was attacked with diarrhœa, which was readily checked. From his own statement, and from his general appearance, it seemed likely that he had taken a good deal of mercury before his admission. From 26th December to 5th January, he progressed rather favourably, taking a small quantity of food voluntarily. He died on the 7th, having been in the asylum twenty-four days. Temperature of head the morning of his death, 83° F.; of abdomen, 84°; of fore arm, 76°; of tongue within the mouth, 84°. The treatment consisted of anodynes and nourishing stimulants.

Autopsy—Fifteen hours post mortem. Body in fair condition, heart enlarged, weighed sixteen and three-quarter ounces. The whole surface of the visceral pericardium opaque and thickened from old pericarditis; aorta dilated and valves ossified; chronic inflammation of the whole mucous membrane of the stomach, a large patch of grey discoloration occupying it to the extent of one-third towards the pyloric extremity. Mucous membrane not nearly so thick here as in the other parts, which were of a deep orange red colour, with uniform capillary congestion. Intestines congested in patches. Liver forty-seven and a half ounces in weight, and much contracted.

Case 2. J. S., æt. 56. Acute Melancholia. A good-looking man, above middle height. Admitted 2nd of February, 1852. His sister had destroyed herself about two months previously. The present attack was caused by grief at a series of misfortunes in his business. He fancied he ought not to eat any

https://doi.org/10.1192/S2514990300001257 Published online by Cambridge University Press

food, but did not want to die. Intestinal action very sluggish, and breath very offensive. Pulse small, tongue brown and furred. He slept very little. Always said he could not take his food, but did not vomit it when swallowed. The treatment consisted of a mild course of blue pill, the continued use of small doses of copaiba, with a vegetable tonic, which appeared for a time beneficial, and subsequently quinine, red wine, and brandy, were given him. He was fed by mouth with a spoon, and beef tea enemas, combining a small quantity of laudanum, were injected into the rectum. An anodyne draught was also given him at night. He alternated considerably during his residence, and finally died exhausted, 6th August, 1852, having been in the asylum 161 days.

Autopsy—Twenty-four hours post mortem. Body in a very emaciated condition. Circumference of arm at largest part, six inches; of thigh at middle of the femur, ten inches. Anterior wall of abdomen sunk almost to the level of the anterior curvature of the spine, the ribs forming, with the crests of the ilac bones, a deep notch. Stomach small and contracted at each orifice. Coats soft and red, marked with chronic inflammation. All the intestines small and dark coloured, with chronic congestion. Colon contained fæces. Gall bladder distended and full of bile.

Case 3. J. C., æt. 32. A tall nervous woman, a native of Greenland. Admitted 1st Oct., 1851. Had been insane for two months, the attack having come on after typhoid fever. When brought to the asylum she was in a very emaciated, feeble condition. Head hot, skin dry and harsh, body very costive, pulse very quick, small and weak, lips parched, breath fœtid, great restlessness and insomnia. She refused all food. Could not be prevailed upon to speak. She continued in a typhoid condition. She suffered from internal piles, from which she lost blood. During the last few days of life palsy of the urinary bladder came on, requiring catheterism. She died twenty days after her admission.

Autopsy—Thirty-one hours' post mortem. Tuberculous deposit at the posterior part of the lower lobe of right lung. Coats of stomach softened, considerable congestion of the lesser curvature. The mucous membrane of the small intestines congested in patches.

Case 4. S. S., æt. 45. A short spare woman, with a pale languid expression. Admitted 4th Aug., 1849. She had been insane four years, the attack having been caused by grief at her mother's death. Was always a nervous hysterical woman, with strong religious feelings. Her appetite varied considerably. She always complained of a sense of fulness and distention about the epigastrium. Was often sick after meals, and subject to bilious attacks, but had no unwillingness to take food on account of any delusion respecting it. She frequently vomited a sanguineous fluid at the catamenial periods. Breath very offensive, tongue often covered with a yellow fur. Alvine evacuations resembling those passed by an infant. For some time before her death she could take but very little nourishment. Towards the close of life she was attacked with diarrhœa. The residence in the asylum was 905 days. The treatment consisted in sinapisms and blisters to the epigastrium, and the administration of light nourishing diet and stimulants.

Autopsy—Thirty-six hours post mortem. Omentum adherent to caput coli and ascending colon. Pyloric extremity of stomach very much narrowed by hypertrophy of the normal structures. The contraction was so great as to admit of nothing larger than a No. 12 catheter without force. Lining membrane very much congested, and considerably softened. Small intestines diminished in size, and lining membrane tinged with bile. Colon contained no fœcal matter.

Case 5. F. R., æt. 53. Admitted 31st July, 1852. In a very emaciated feeble condition—so much so, indeed, that she was in a state of syncope when removed from the vehicle in which she had been brought. She had been in a very destitute condition for six months, and latterly had refused all food, believing it to be poisoned. During the six weeks before her admission the quantity of food she was said to have taken was incredibly small. Her bowels were inclined to be torpid. After her admission wine, eggs, and brandy were administered to her in small quantities and at short intervals. Her mind became more tranquil, and she slept a good deal from small doses of morphine; but her bodily condition never improved, and she died on the 12th of August, having been under treatment thirteen days.

Autopsy—Twenty-six hours post mortem. The heart presented the appearance of old pericarditis, and the left lung of old pleurisy. The mucous membrane of the stomach was much softened, and of a yellow colour, perhaps stained by yolk of eggs, which she had taken shortly before death. The fundus and large curvature were mamillated, as if from chronic inflammation. The ilium was greatly congested, of a dark red colour, and empty.

Case 6. A. D., æt. 68. Admitted 5th April, 1853. In a very pale and emaciated condition. Appetite indifferent—though she expressed a great desire for food. Her voice was husky, and she had a hacking cough. For a considerable time during her residence in the workhouse, from which she was brought, she had been in the habit of exchanging her food for snuff, and had taken very little to eat. Her strength gradually declined. She was attacked with obstinate diarrhœa, and died completely exhausted six days after her admission

Autopsy—Twenty-four hours post mortem. Body much wasted. Right lung burrowed with vomicæ. Mucous membrane of stomach pale and softened. A patch near the pyloric orifice the size of a shilling, almost black, without increased vascularity either underneath or around it, presenting very much the appearance of incipient gangrene.

From the preceding statements we may, I think, deduce the following conclusions:—1st. That, as a general rule, the sane are capable of enduring a more prolonged period of fasting than the insane.

2nd. That after a long-continued fast there is not only a repugnance to food, but the stomach becomes intolerant of its presence, so that it is either vomited or passed off from the system undigested; and that when the system has become enfeebled by want of food, the patient sinks even if a sufficient amount of aliment be afterwards taken.

3rd. That we should, at an early period, have re-

https://doi.org/10.1192/S2514990300001257 Published online by Cambridge University Press

course, if necessary, to compulsory measures to introduce food into the stomach, and that this object is better accomplished by passing it through the fances by means of any ordinary funnel than by the use of a stomach pump, this measure being attended by less trouble to the operator, and less inconvenience and danger to the patient.

4th. That the nutriment given should embrace all the alimentary principles, as represented in nature by milk, and should be contained in as small a compass as possible.

5th. That cases complicated with gastric disorder are much more difficult to overcome, and dangerous to life, than others where the refusal of food depends only on the peculiar mental condition of the individual, in which latter case attention to the state of the general system, sedatives, local counter-irritants, and moral influences, will generally effect a cure.

And lastly, That the debilitated state of the system, caused by inanition, being productive of a tendency to abrasion, attention should be given at an early period to prevent this result. I must add that I have elsewhere seen, in two instances, sloughing of the cornea occur in cases of starvation.

In the above cases the appearances of the encephalic organs have, for the sake of condensation, been omitted in this statement. In all the cases, however, the brain was found considerably diseased, presenting more or less atrophy of its substance, with a corresponding amount of subarachnoid effusion. It would have been easy to have added to the above a considerable number of cases, in which the same treatment was terminated by recovery. In all the above cases it is probable that, at the period of admission into the asylum, the amount of structural change in the coats of the stomach was considerable.

In those which recovered it is fair to assume that these changes did not exist, or that they were so slight as to be removeable by the means at the command of the physician. These means may be briefly summed up :—

1st. The regulation of the bowels by enemata, mercurial alteratives, or astringents, with small doses of opium. The pulv cretæ c hydrarg and the pulv cretæ c opio form excellent remedies for this intention.

2nd. If there is tenderness at the pit of the stomach, the application of sinapisms and turpentine stupes. The condition of these patients generally forbids the use even of a few leeches.

3rd. The skin in these cases is always harsh and dry, and the warm bath is very beneficial, if the strength of the patient will permit its use; if not, tepid sponging must be substituted.

4th. Warmth and quietude must be ensured. The patient must be placed in a soft flock bed, and frequently warm water bottles, well wrapped in flannels, must be placed at his feet and sides. All muscular effort, even that attending the upright or sitting position, is prejudicial where a main object of treatment is to husband carefully the diminished powers of life. And, for the same reason, artificial warmth is useful and often necessary.

5th. But the most imperative indication is to supply the failing powers by food, or to maintain them by stimuli. The condition of the coats of the stomach in these cases is not of that active inflammatory character which would contraindicate the use of the latter agents; and, even if it were, the time comes when they must be given, or the patient will die at once.

In the Devon asylum, the combination of food and stimulus found most useful is that contained in the *London Pharmacopeia*, under the name of Spiritus Vini Gallici; namely, egg, brandy, and sugar. A few table-spoonfuls of this compound given warm is an excellent restorative. But well made beef tea, arrow-root made with boiled milk and with a dash of brandy in it, port wine negus, &c., require also to be given, and nutritive enemata must not be forgotten. The indications for the administration or the withdrawal of stimulus must be carefully watched. These cases strongly resemble cases of typhus fever, not only in many of the symptoms, but in the indications for treatment; and, as in that disorder, no strict rules can be laid down for the employment of stimuli and nourishment; the tact of the physician must guide him in their employment. They must, however, be given a little at a time, and frequently; and it deserves remark, that in this kind of cases difficulty seldom arises in the administration of food from the resistance of the patient. If his nurses are soothing and skilful, he will take the food from a spoon or a child's pap-boat; if he will not, it may be passed through the nares into the pharynx: but this expedient is seldom needful. The cases, in which the introduction of food into the stomach forms the most perplexing part of the treatment, are widely distinct from those under discussion. Such cases owe their origin to delusions of various kinds; to suicidal intentions; and to the fear of poison; to the idea of expiating a crime; or of deserving credit in heaven for self-inflicted suffering on earth. In such cases, if brought under treatment before abstinence has produced organic disease of the stomach, the abstinence is always curable; but, if they are neglected, they tend to pass into the form of disease which has been the subject of this paper. The self-imposed abstinence eventually causes disease of the gastric coats; these become atrophied, and then the cases are identical with those here recorded, and all treatment is in vain.

It is probable that softening of the coats of the stomach results from emaciation of the body in general, and that it is intimately connected with advancing decay of the nervous centres. The frequent occurrence of softening of the coats of the stomach after ramollissement of the brain is a fact noted by Rokitanski; and it is one deserving investigation in cases like the above, as it affords an obvious clue to the greater danger of prolonged fasting where there is disease of the cerebral organs, than when they are healthy.

On the Non-Restraint System, by Robert Gardiner Hill, Esq., *Eastgate House, Lincoln.*

In a recent review of the answers of the medical officers of asylums, published in the Eighth Report of the Commissioners in Lunacy, it is objected that "many

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