

ART. VIII.—FASTING AND FEEDING:

A DETAILED ACCOUNT OF RECORDED INSTANCES OF UNUSUAL ABSTINENCE FROM FOOD, AND OF CASES ILLUSTRATING INORDINATE APPETITE.

BY THE EDITOR.

THE widespread interest in the subject of this paper, excited by recent successful and unsuccessful attempts to sustain life under abnormal conditions, and the existence of a general desire for information respecting the history of similar efforts made in the past, have induced me to collect the narratives here brought together. No explanation need be offered of the apparent want of connection to be observed in the article, although as far as possible a definite sequence has been maintained. The literature of the subject is, indeed, most extensive, and this, in place of making the task of collating an easy one, has rather served to embarrass in the effort to present the most reliable experiences. It must not be supposed that all the stories here collected are to be received as trustworthy; many, indeed, bear the stamp of highly imaginative genius; but all possess more or less interest to make them worthy of record. Some hope is entertained that the labour expended on this essay may be productive of good, by stimulating scientific inquiry into the circumstances attending such cases as may come under the observation of practitioners in their usual course. Opportunities for this are, unfortunately, of frequent occurrence in the practice of physicians engaged in the treatment of insane patients; and it may be, too, that they will obtain valuable hints from those cases of hallucination mentioned in this paper. There is, undoubtedly, very much yet to be learned, concerning the physiology of starvation, and not a little of the knowledge to be gained is of a kind most readily accessible to the superintendents of asylums. As a matter of simple interest, however, apart from the scientific aspect, an abstract of instances of abnormal appetite may be not unacceptable to the reading public.

That life can be preserved, and the ordinary duties of it performed, on a diet comparatively simple and limited in amount, is an accepted truth with large numbers of people at this time; and as confirming this opinion, the following account, from "The Book of Wonderful Characters," is possessed of much interest:—

“ Thomas Wood was born on the 30th of November, 1719, of parents who were apt to be intemperate in their manner of living; he was subject to various disorders, particularly the rheumatism, until he attained the age of thirteen years. He then had the small-pox, and from that time became healthy, to the age of about forty-three years. From his attaining the state of manhood to this period, but especially during the latter part of the time, he indulged himself, even to excess, in fat meat, of which he used to eat voraciously three times a day, together with large quantities of butter and cheese. Nor was he more cautious with respect to strong ale, which was his common drink. About his fortieth year he began to grow very fat, but, finding he had a good appetite and digested his food without difficulty, and that his sleep was undisturbed, he made no alteration in his diet. It was in his forty-fourth year that he first began to complain of the heart-burn, want of sleep, frequent sickness at his stomach, pains in his head, &c. He had now almost a constant thirst, a great lowness of spirits, violent rheumatism, and frequent attacks of the gout. He had, likewise, two epileptic fits; but the symptom which appeared to him to be the most formidable was a sense of suffocation, which often came on him, particularly after his meals. Under such a complication of diseases, every day increasing, he continued till the month of August 1764. At this time the Rev. Mr. Powley, a worthy clergyman in the neighbourhood, observing his very ill state of health, and the extreme corpulence of his person, recommended him an exact regimen; and pointed out the ‘Life of Cornaro’ as a book likely to suggest to him a salutary course of living. This work convinced him that intemperance was the principal cause of all his complaints, and he therefore determined to try whether, the cause being removed, the effects might not cease. However, he thought it prudent not to make a total change in his diet suddenly; accordingly, he at first confined himself to a pint of ale every day, and used animal food sparingly. This method he soon found to answer to his satisfaction, for he felt easier and lighter, and his spirits became less oppressed. These good effects encouraged him to proceed in his experiments, and, therefore, after he had pursued the regimen before mentioned during two months, he deducted from his allowance half the former quantity of ale, and was still more sparing of gross animal food. In this course he continued till the 4th of January, 1765, when he entirely left off all malt liquor, and in the following month he began to drink only water, and to eat none except the lighter meats. Under this degree of abstinence, although some of his complaints were relieved, yet some of them remained in full force. The

rheumatism tormented him; he then used the cold bath, and next the dumb-bell, in which he persevered. Water was his only drink from the beginning of January, 1765, to the 25th of the following October. From this day he drank no more until the 9th of May, 1766, when he drank two glasses and a half of water; after that period he drank no more of any liquor whatever, except only what he took in the form of medicine. He then avoided cheese, then butter, and on the 31st of July in the same year was the last time he tasted animal flesh. From that period he principally confined himself to pudding made of sea biscuit. He allowed himself very little sleep, generally going to bed at eight o'clock in the evening, sometimes even earlier, and generally rising about one o'clock in the morning, but being very rarely in bed after two. Under this strict course of abstinence he continued to live, and he expressed, in the highest terms, the great pleasure and tranquillity of mind which he enjoyed in consequence of it. The poor diet to which he accustomed himself was as agreeable to his palate as his former food used to be; and he had the additional satisfaction to find his health established, his spirits lively, his sleep no longer disturbed by frightful dreams, and the strength of muscles so far improved that he could carry a quarter of a ton weight, which weight he in vain attempted to carry when he was about the age of thirty years. His voice, which was entirely lost for several years, became clear and strong. In short, to use his own expression, he was metamorphosed from a monster to a person of a moderate size; from the condition of a decrepit old man to perfect health, and to the activity and vigour of youth. His flesh became firm, and his complexion well coloured.

“Prejudiced by a common prevailing superstition, Mr. Wood never suffered himself to be weighed, either during the state of his extreme corpulence, or after his reduction, but it is conjectured that he lost ten, or perhaps eleven stone weight. On being asked why he submitted to such very strict rules of diet, he answered that, as he was ten years older than Cornaro was when he began his regimen, he thought that, on that account, a more severe and abstemious course was necessary for him, and that he was greatly influenced by Dr. Cheyne's opinion, ‘that Cornaro would probably have lived longer had his regimen been more strict.’ To the question what first induced him to abstain from all drink, he answered, that it happened one day that the servant had forgotten to bring his water at dinner, as usual; that, being then full of business, he did not think of calling for any, and that, having found himself easier and less oppressed by that meal than common, and determined to try whether a total omission of liquids might not be an

improvement to his diet, he soon found the experiment to answer. He added that he was further encouraged to abstain from liquids by an observation he had made in feeding hogs. He never allowed those animals to drink, and to this he attributed the excellence of his pork; it being greatly valued on account of the whiteness and firmness of the flesh. Mr. Wood was a great enemy to all fermented liquors, to butter, and to salt. Nay, he even doubted of the wholesomeness of common bread, meaning bread which had undergone the process of fermentation. The pudding, which was his sole support during two years, was made as follows: three pints of skimmed milk, boiling, were poured on one pound of the best sea biscuit, broken into pieces. This was done over night, and these ingredients were left to stand together until the following morning, when two eggs were added. This compound, being boiled in a cloth about the space of an hour, became a pudding of sufficient consistency to be cut with a knife. Of this his quantity used to be one pound and a half at four or five o'clock in the morning, as his breakfast, and the same at noon, as his dinner, after which he abstained from food until the next day.

“The case of Thomas Wood was attested as truth by two clergymen, a churchwarden, a physician, and an apothecary of the place he lived in. An account of him was likewise drawn up by Sir George Baker, and inserted in the second volume of the *Medical Transactions*.

“Thus, by extreme abstinence and regularity, he prolonged an impaired constitution, and died in the year 1783, aged sixty-three.”

We may accept the case of Mr. Wood as an authentic account of abstinence, without much doubt; but whether that of Eve Fleigen, quoted below, is equally trustworthy, must be determined by each reader for himself. “The Book of Wonderful Characters” is the source of the story, the authorities for it being chiefly Henry Wilson and James Caulfield.

“Eve Fleigen, or Vliegen, was a native of the Duchy of Cleve, in Germany. She is said to have lived long upon no other nourishment than the smell of flowers. Under one of the extant portraits of her are the following lines:—

Twas I that pray'd I never might eat more,
Cause my step-mother grutched me my food;
Whether on flowers I fed, as I had store,
Or on a dew that every morning stood
Like honey on my lips, full seventeen year.
This is a truth, if you the truth will hear.”

Eve Fleigen would have been just the wife for a noble poet of the present century, who hated to see women eat.

This story may keep company with Pliny's relation of the Astomi . . . and with that of the Chinese virgins, who are said to conceive by smelling at a rose. Yet the legend has a fine poetical sentiment underlying it. Has there not for all of us been a time when our heart was so full of the spring that—

It seem'd awhile that bounteous Heaven
Nought else for man's support had given
But sky, and trees, and *flowers!*

In cases of forced abstinence from food, under circumstances occasioned by accident, &c., there have been many lives saved by what would seem the most insufficient means. The *Encyclopædia Britannica* cites that of "John Brown, an Ayrshire miner, who lived twenty-three days buried in a coal-mine, without swallowing anything but small quantities of chalybeate water sucked through a straw, as a well-authenticated instance of how little will sustain life, especially in a contaminated atmosphere, which, by diminishing nervous excitability, would mitigate the cravings of hunger."

A very similar instance is recorded in vol. xiii. (1683) of the *Philosophical Transactions*, of which the following is a verbatim reprint. It may be safely assumed that the *calx* referred to at the end chemically resembled the solid constituents of John Brown's chalybeate draught:—

"Some *Colliers* working in a *Cole-Pit* at *Herstol*, about half a League from *Liege* on our *Shrove Munday Feb* betwixt 7 and 8 in the morning, one of them peirced a *veine* of *water*, which gushing in violently drowned one, those that were near the mouth of the *Pit* were drawn out, but four of them being further within saved themselves upon a little ascent within the *Mine*, which has several *Lanes* or *Allies* in it, and were shut in by the *water* which stopt their passage out. 24 days were spent in drawing off the *water* rather to render the *mine* useful again then out of any hopes of saving the men; at last on *Thursday* March the 9th, being the 25th of their confinement, *men* entred in, found these 4 alive, and drew them out, and I myself among many others saw and examined them about these *particulars*: They had not a morsel of Bread with them, but lived on the *water* of a little *Fountain* which broke out by them: 2 *bottles* of which I caused to be *evaporated* to see if it were anything extraordinary, and found nothing but a scarce perceptible *Calx* remaining."

Fodéré ("Médecine légale") states that some workmen buried in a damp quarry were extricated alive after a period of 14 days.

Dr. Sloane (*Medical Gazette*, vol. xvii. p. 389) gives an

account of a man, 65 years of age, who was rescued from a coal-mine after he had been immured 23 days, during the first 10 of which he had a little muddy water. He was so much reduced that he died three days after.

In the same connection, the case of Elizabeth Woodcock* is worthy of record. She was buried in 1799 nearly eight days under snow, with no other nourishment than snow and snow-water, and her miraculous preservation is ascribed to "the great warmth and nutritious quality of the snow. Of this certain fact we are not without many astonishing and convincing proofs. That persons can subsist on snow and on water for many days is also evident, a remarkable instance of which occurred on Wednesday, November the 22nd, 1820. Some children, passing a dry well in a field, in the parish of Dodding-ton, heard a voice which much frightened them; on examination it was found to proceed from a young woman of the name of Cecilia Steers, who accidentally fell in on the eighth as she was going to Rodmersham to see her mother. The poor girl had nothing to live on the fifteen days and nights but a little snow-water, which she collected in a hole she made at the bottom of the well for that purpose. The well was thirty feet deep, and had been made for the purpose of obtaining chalk."

"Another instance is likewise on record of three women who survived after being buried thirty-seven days in the snow at Bergemoletto, in Italy, in the year 1765. This is attested by Mons. Lornis."

To the medical man the following histories will be especially interesting, both being well authenticated, and each possessing features which lend it importance in a physiological sense. These accounts are taken from the article "Abstinence," in Charles Knight's *English Cyclopædia*, 1859, the *Penny Cyclopædia*, 1833, having been laid under contribution for them:—

"The history of the Progressive Changes which take place in the system on the total abstraction of food, is illustrated in the most perfect manner by two cases which fell under the notice of physicians capable of accurately observing and duly appreciating each successive event.

"Many wonderful stories are on record by men whose veracity is beyond question, and who were endowed with more than ordinary discrimination and judgment. The record on this account is invaluable, while in itself it is highly curious and instructive.

"For the first case we are indebted to Dr. Currie of Liverpool. In August, 1795, a gentleman of Yorkshire, aged sixty-six, applied to this physician for his assistance, on account of

"Wonderful Characters." By Henry Wilson, 1826, vol. i. p. 383, Note.

an obstruction in his swallowing food, with which he had been afflicted for ten or twelve months. At first the complaint was slight; it occurred only when he attempted to swallow dry and hard substances; it afterwards extended to solids of every kind, and, at the time he was first seen by his physician, although he was still able to pass down liquids, the quantity he could swallow was not sufficient for his nutrition, and he was considerably reduced. On the introduction of a bougie into the gullet, it passed about two inches easily, but then met with an obstruction which, by a moderate pressure, was overcome. It then passed easily seven or eight inches more, but at the lower part of the tube, towards its termination in the cardia, it met with a firm resistance which no patience or skill could surmount. This obstruction proceeded from a scirrhus tumour, which, gradually increasing at first, diminished the passage, and at length closed it wholly. On the evening of the seventeenth of October, a sudden increase of the obstruction came on, and from this time he was able to swallow only a tablespoonful of liquid at a time, and at long intervals. It was with difficulty that he got down seven or eight spoonful of strong soup in the day, and this quantity gradually diminished. On the thirteenth day from this sudden increase of the obstruction, the passage appeared to be closed. The patient himself, to the last, was far from despairing of his recovery; and the affectionate friends around him, though they could not but see the issue of the case, yet desired that his life might be prolonged to the uttermost. The following plan was, therefore, adopted with this view. Every morning a clyster was administered, consisting of eight ounces of strong broth, made chiefly of the membranous parts of beef, those being considered the most nutritious, into which were rubbed two yolks of egg, and to which were added forty drops of laudanum. This was repeated in the afternoon, and again in the evening; previously to which, in the evening, he was placed up to the neck in a tepid bath, of which one-fourth was milk and the rest water; the whole quantity amounting to twenty-four gallons. The temperature was fixed at 96°, to accommodate his sensations, and the time of immersion was gradually prolonged from forty-five minutes to an hour.

“After a few days it was found that the retention of the rectum improved, so that the clysters were enlarged to ten ounces of broth, and three yolks of eggs each, to which were added eight ounces of white wine, and the laudanum, which was added to the evening clyster, was gradually increased from sixty to two hundred and fifty drops. Thus the whole of his nutriment for twenty-four hours consisted of thirty ounces of broth, twenty-four ounces of wine, nine yolks of eggs, and from 250 to

380 drops of laudanum, and administered by clyster, with what liquid might be supposed to be taken up in the bath by the absorbents of the surface of the body. When in tolerable health, at the commencement of his complaint, this gentleman, who was a tall man, and naturally corpulent, weighed 240 lbs. Before the obstruction had become complete, imperfect nutrition had reduced him to the weight of 179 lbs. In twenty days from the period of the sudden increase of the obstruction he was reduced to 154 lbs.; on the twenty-fourth day he had lost 5 lbs. more; and at the period when his delirium commenced, that is on the thirty-second day from the night that he ceased to swallow, he weighed 138 lbs., having lost upwards of 100 lbs. of his original weight. He lived four days longer, that is, thirty-six days from the period when the obstruction was supposed to be complete; but during these last four days no nutriment in any form, or of any kind, was administered; for the rectum no longer retained the clysters, and the administration of the bath appeared, under these circumstances, to be wholly useless.

“For a month after the total obstruction of the passage the temperature and the pulse were natural, but on the thirty-second day the pulse became small and frequent; on the following day the eyes lost their common direction, the axis of each being turned towards the nose; he complained that he sometimes saw double, but the sensibility of the retina was rather increased than diminished, for, on the admission of the light of the window, he screamed out, though he had before been accustomed to this light. On the next day there was considerable incoherence of mind; this incoherence passed rapidly into delirium, during the prevalence of which there was a perpetual and indistinct muttering, with great restlessness and agitation; the skin and the extremities were sometimes of a burning heat, and sometimes clammy and cold; the pulse became feeble and irregular; the respiration, which had been singularly undisturbed, became laborious, and in ninety-six hours after the clysters and all other means of nutrition had been abandoned he ceased to breathe.

“During the whole of this melancholy progress to inevitable death, this unfortunate gentleman complained very little of hunger; occasionally he expressed a wish that he could swallow, but not often nor anxiously; and when questioned on the subject of his appetite, he always declared that he had no hunger which occasioned any uneasiness. The clysters evidently relieved the sense of hunger, and the opium they contained seemed to have a powerful share in producing this relief. It occasioned quiet and rest after each clyster, and allayed every kind of desire or appetite. Neither was he much disturbed with thirst. This sensation

was, indeed, troublesome during the first days of his abstinence, but it abated, and, as he declared, was always removed by the tepid bath, in which he had the most grateful sensations. His spirits were uncommonly even, and his intellect perfectly sound. He occupied himself a good deal in his private concerns, and, as usual, interested himself in public affairs. In order to husband his strength he was confined a good deal to bed; but, till the last few days of his life, he dressed and undressed himself daily, and walked, not only about his room, but through the house. His nights were quiet; his sleep sound, and apparently refreshing. Just before his delirium set in he had very lively dreams, which were all of a pleasant nature, and, in the last conversation he had with his physician, he told him he had had a very gay evening with two Yorkshire baronets whom he named; that they had pushed the bottle about freely; that many jokes had passed, at the recollection of which he laughed heartily (a thing uncommon with him); but it was observable that he was unable, longer than a moment or two, to distinguish this scene which had passed in sleep from a real occurrence; and this state of mind lapsed into delirium, from which he never recovered. At this period he was so weak as to be scarcely able to turn himself in bed, to which he had been entirely confined several days previously to his death.

“The second case, which is no less interesting, occurred to Dr. Willan. It was that of a young man of studious and melancholic turn of mind, who, being affected with indigestion, undertook voluntarily to live without food. He drank nothing but water flavoured with a little orange-juice. He was seen by Dr. Willan on the sixty-first day of his fast. At that time he was emaciated to a most astonishing degree; the muscles of his face were entirely shrunk, his cheek-bones stood prominent and distinct, affording a most ghastly appearance; the abdomen was concave from the collapsed state of the intestines, the limbs were reduced to the greatest possible degree of tenuity, and the processes of their bones were easily distinguishable. His whole appearance suggested the idea of a skeleton prepared by drying the muscles upon it in their natural situations. His mind had become imbecile.

“Unfortunately the treatment adopted was injudicious, the quantity of food allowed him being much too large; yet for the first few days he appeared to improve, regaining flesh and strength and acquiring firmness, and even cheerfulness of mind; but on the night of the fifth day he was sleepless and restless; on the morning of the sixth he began to lose his recollection, and before midnight he was quite frantic and unmanageable. At the same time his pulse was increased in frequency, with con-

siderable heat of the skin and tremors. During the following day he continued raving and talking very incoherently, as he had done during the preceding night. He remained nearly in the same state, scarcely ever sleeping, and taking very little nourishment. His pulse became daily smaller and feebler, and beating at length 120 strokes in a minute, and his emaciation still increasing, until the eleventh day from the period that he began to take food and medicine and the seventy-second from the commencement of his abstinence, on which day he died, quite exhausted.

“There is no authentic case on record in which the duration of the abstinence was as long as this, and both these cases, taken together, afford an excellent history of the disorder of the functions and the exhaustion of the powers of life on the total and continued abstraction of food.

“The mind, in the first case, was naturally firm and strong; in the second it was supported by an enthusiasm amounting to insanity.

“When the mind is feeble, and especially when it is under the influence of fear, anxiety, despondency, or any other depressing cause, the duration of life is greatly abridged. It is instructive to observe the absence of severe suffering from hunger and thirst; the absence of all acrimony of the fluids; the absence of all violence and turbulence of mind until delirium set in, the precursor of death.”

Though without the adjuncts of particular disease, the case of Henry Welby, narrated in “Wonderful Characters,” vol. i. pp. 148–51, bears, like the two preceding, on the facility with which vitality can be supported efficiently without the extensive variety of meats common to advanced civilisation:—

“In this gentleman we find a rare example of extraordinary abstinence and seclusion, in the midst of a gay and luxurious city. For the long period of forty-four years he withdrew himself from all society, and during that time never tasted either fish, flesh, or fowl, or any strong drink. An account of his remarkable life was published in 1637, the year after his death, under the title of *The Phoenix of these late times*. The noble and virtuous Henry Welby, a native of Lincolnshire, was born in 1552, and inherited a clear estate of more than £1,000 a year. He was regularly bred at the University, and studied some time in one of the Inns of Court. He afterwards spent several years in the Low Countries, Germany, France, and Spain. When he returned he settled on his paternal estate, and lived with great hospitality, respected by the rich, prayed for by the poor, and honoured and beloved by all. Here he married, and had a daughter, who was afterwards led to the hymeneal altar by Sir Christopher Hilliard, a baronet in Yorkshire.

“ At the age of forty, a younger brother, with whom he had some difference of opinion, meeting him in the field, snapped a pistol at him, which fortunately, however, flashed in the pan. Thinking this was only done to frighten him, he coolly disarmed the ruffian, and, putting the weapon carelessly into his pocket, thoughtfully returned home. On examination, he discovered that the pistol was charged with more than one bullet, and this circumstance had such an effect on his mind, that he instantly formed the extraordinary resolution of retiring entirely from the world, in which he inflexibly persisted till the end of his life.

“ In the year 1592 he accordingly came to London, and took a neat house at the lower end of Grub Street, near Cripplegate. This house he prepared for the purpose, and, contracting a numerous retinue into a small family, he selected three chambers for himself—one for eating, another for sleeping, and the other for a study. As they were one within another, while his repast was set on the table by an old maid, he retired into his bed-chamber; when his bed was making, into his study, till the rooms were clear. From these chambers he never issued till he was carried out, forty-four years afterwards, to his grave; during which time no person ever saw him, except his servant Elizabeth, and she only in cases of necessity, although she cleaned his rooms and provided his food.

“ During the whole time of his retirement, his chief food was oatmeal gruel, or occasionally in summer a salad of cool herbs, or the yolk of an hen’s egg, but not the white, and what bread he ate he cut out of the middle, never tasting the crust. His constant drink was beer, excepting at times his servant Elizabeth fetched him some milk hot from the cow: yet he kept a bountiful table for his servants, and sufficient entertainment for any stranger or tenant who had business at his house. Every book that was printed was bought for him, but such as related to controversy he laid aside and never read.

“ At Christmas, Easter, and other holidays he had all dishes in season provided and served up in his own chamber, when, having returned thanks to God, he would put a clean napkin before him, and, putting on a pair of white holland sleeves, which reached to his elbows, and cutting them up dish after dish, would send them to different poor neighbours, till the table was quite empty; and then, without tasting anything whatever himself, caused the cloth to be taken away. This formality he invariably practised, both dinner and supper, on those days. As he kept a kind of perpetual fast, he no doubt devoted himself to continual prayer, excepting what he dedicated to study, for he was both a scholar and a linguist, and left behind him some collections and translations of philosophy. When any person clamoured impu-

dently at the gate, they were not, on that account, immediately relieved; but when from his private chamber, which looked into the street, he perceived any sick, infirm, or lame, he sent after them with relief enough for several days. He likewise inquired what neighbours were industrious, and which had the largest families; and if their labour and industry could not abundantly supply their wants, he used liberally to relieve them according to their necessities.

“This singular, but benevolent and exemplary, character died while sitting in a chair, at his house in Grub Street, after a confinement of forty-four years, October the 29th, 1636, aged eighty-four years. At his death his hair and beard were so overgrown that he appeared rather like a hermit of the wilderness than the inhabitant of one of the first cities in the world. His remains were interred in St. Giles’s Church, Cripplegate.

“The following lines are from the pen of the celebrated John Taylor, better known by the appellation of the Water Poet:—

Old Henry Welby, *well be* thou for ever,
 Thy purgatory’s past, thy heaven ends never.
 Of eighty-four years life, full forty-four
 Men saw thee not, nor e’er shall see thee more;
 ’Twas piety and patience caused thee
 So long a prisoner (to thyself) to be.
 Thy bounteous house, within, express’d thy mind;
 Thy charity, without, the poor did find.
 From wine thou wast a duteous *Rechabite*,
 And flesh so long time shunn’d thy appetite:
 Small beer, a candle, milk, or water gruel,
 Strengthen’d thy grace, maintain’d thy daily duel
 ’Gainst the bewitching world, the flesh, and fiend,
 Which made thee live and die well.—There’s an end.”

The length of time during which the human being can live without food must always be an undecided matter. The varying need of different physiqes imports an uncertainty into any consideration of the kind that will prevent a definite statement of a time within which all must succumb. The proof of this is quite unnecessary; but there can be no question that beyond a certain maximum, even under the most favourable circumstances, life with fasting cannot be prolonged. How long this time can be the above cases suggest; and a passage in the *Gentleman’s Magazine*, 1854, vol. lxxiv. part ii. p. 1223, relating to “Captain David Woollard and four seamen, who lost their ship while in a boat at sea, and surrendered themselves up to the Malays in the Island of Celebes, contains an interesting account of their sufferings from hunger and various hardships, and their escape from the Malays, after a captivity of two years and a half; also an account of the

manners and country, and a description of the harbours and coast, &c.; together with an introduction and appendix, containing narratives of various escapes from shipwreck, under great hardships and abstinence, holding out a valuable seaman's guide, and the importance of union, confidence, and perseverance in the midst of distress," refers to the instance above mentioned of "a young man, driven almost to insanity by intense study, and supposed by Dr. Willan, who reports it, to be the longest instance recorded in the 'Annals of Physic'—61 days."*

There can be no question but that there is always floating in the atmosphere an amount of matter, organic and inorganic, sufficient to go some way towards restoring the small loss undergone by a fasting body in repose. The proof of this has been frequent and complete for short periods, and innumerable statements on the subject are to be found scattered throughout literary works and periodicals. Many of them, it must be said, require to be taken with more than a single *granum salis*, but they deserve some notice. The following, in addition to those already quoted, are a considerable number of these fragmentary excerpts:—

Pliny.—A person may live seven days without any food whatever; and many people have continued more than eleven days without either food or drink.—*Hist. Nat.*, lib. ii. c. 54.

Petrus de Albano.—There was in his time in Normandy a woman thirty years of age, who had lived without food for eighteen years.—*Exposit. Ult.*, prob. x.

Alexander Benedictus mentions a person at Venice who lived forty-six days without food.—*Pract.*, lib. xii. c. 11.

Toubertus relates that a woman lived in good health three years without either food or drink; and that he saw another who lived to her tenth year without food or drink, and that when she arrived at a proper age she was married, and lived like other people in respect to diet, and had children.—*Decad.* i., paradox 2.

Clausius et Garcia ab Horto mention that some of the more rigid Banians in India abstain from food frequently for twenty days together.—*Hist. Arom.*, lib. i.

Albertus Krantzius says that a hermit in the mountains in the canton of Schwitz lived twenty years without food.—*Hist. Eccles.*, lib. xii. c. 21.

Ganguinus.—Louis the Pious, Emperor and King of France,

* Dr. Willan's account gives 72 days as the period during which his patient lived from the beginning of the fast—but food was taken the last 11 days.

who died in 840, existed the last forty days of his life without food or drink.—*Hist. Franc.*, lib. v.

Citois gives the history of a girl at Confoulens, in Poitou, who lived three years without food.—*Abstin. Confolentan.*

Albertus Magnus saw a woman at Cologne who often lived twenty, and sometimes thirty, days without food; and that he saw a hypochondriacal man, who lived without food for seven weeks, drinking only a draught of water every other day.—*De Animalibus*, lib. vii.

Hildanus records the case of a girl who lived many years without food or drink. This subject, he says, had the abdomen wasted and retracted towards the spine, but without any hardness. She did not void any urine or fæces by the bowels.—*Cent. V. Obs. Chirurg.* 33.

“Pennant gives an account of a woman in Ross-shire, who lived a year and three-quarters without meat or drink. This astonishing circumstance is outdone by a book printed in London, 1611, which gives a narrative of Mrs. Eve Fleigan, who lived after the manner of the Astomi (people without mouths), who lived on the smell of flowers, according to Pliny’s history of them.

This maid of Meurs thirty and six years spent,
Fourteen of which she took no nourishment;
Thus, pale and wan, she sit sad and alone,
A garden’s all she loves to look upon.”—*Newspaper paragraph.*

“In the year 1724, John Ferguson, of Killmelford, in Argyle-shire, overheated himself in the pursuit of cattle on the mountains, then drank largely of cold water and fell asleep. He slept for four-and-twenty hours, and waked in a high fever; ever since his stomach loathed, and could retain no kind of aliment but water. A neighbouring gentleman (Mr. Campbell), to whom his father was tenant, locked him up for twenty days, supplying him daily with water, and taking care that he should have no other food; but it made no difference either in his look or strength. At the age of thirty-six (when the account was sent to the Philosophical Society) he was of a fresh complexion, and as strong as any common man.”—*Phil. Trans.*, vol. xlii. page 240.

“The records of the Tower mention a Scotchman imprisoned for felony, and strictly watched in that fortress for six weeks, in all which time he took not the least sustenance, for which he had his pardon.”—*Encyclopædia Londoniensis.*

William Lithgow says, in his “Nineteen Years’ Travels and Adventures in Europe, Asia, and Africa,” that “After ten days’ feasting,” his associate and he “set forward for Switzerland.

In the canton of Bern, near to Urbs, they went to see a young woman who, for thirteen years, had neither eat, drank, nor excremented, as was vouched by her friends, physicians, &c. She was always 'bed-fast,' and reduced to sinews, skin, and bones. The year after she recovered her natural strength and appetite, married, had two children, and died in the fifth year."—*Gentleman's Magazine*, 1775, vol. xlv. p. 518.

Sylvius asserts of a young woman in Spain, aged twenty-two years, that she never ate any food, but lived entirely on water; and that there was a girl in Narbonne, and another in Germany, who lived three years in good health without any kind of food or drink.—*Consil. Adver. Famem.*

It is said that Democritus lived to the age of 109 years, and that, in the latter part of his life, he subsisted almost entirely, for forty days at one time (according to some writers), on smelling honey and hot bread.

For catalepsy and mania a very rigid abstinence may be borne for a considerable period.—See *Dublin Hospital Reports*, vol. i. p. 159; *Phil. Trans.* vol. xiv. p. 577; *Mémoires de Toulouse, l'an 1788.*

Raulin mentions a case of fasting of fifty-two days, water alone being drunk during the time.—*Observations des Médecines*, p. 270.

Dr. Willan attended a patient who had fasted sixty-one days, with the exception of drinking from half-a-pint to a pint of water daily, mixed with a very small quantity of orange-juice, two oranges lasting him for a week, without any employment of the pulp.*—*Medical Communications*, vol. ii.

Dr. John Mason Good has given several of these histories at some length in the running Commentary to the volume on "Nosology." See also *Mém. de l'Acad. des Sciences, l'an 1764*; *Stalpart Van der Wiel, Observ. Rar. Mem. of the Lit. and Phil. Soc. of Manchester*, vol. ii. p. 467; and two extraordinary cases of fasting quoted in the *Medical Gazette* for July 1833. In one of these instances, the patient is stated to have been living six years and a half without swallowing any food, though she moistened her mouth occasionally with water, tea, or whey, which she invariably spat out again. During four years she had relief only once by stool, and three times by urine. At the age of thirty-five the catamenia ceased altogether. In the other case, originally published by Professor Ricei of Turin, the inability to take food continued about three years; and on the death of the patient, who was also a female, the descending colon and commencement of the rectum were found so obstructed

* *Vide* pp. 259 and 263.

by the effects of chronic inflammation that no solid matters could pass along them.*

There are many traditions, in all national histories, relating to the means of sustaining life resorted to, under circumstances of danger and trial; and travellers recount the marvellous enduring powers of Indians and others. These stories have often been made use of by physiologists, particularly those writers of former generations who addressed themselves to popular readers. Dr. Paris, for instance, in his "Treatise on Diet," p. 78, says:—

"Whenever the Indians of Asia and America undertake a long journey, and are likely to be destitute of provisions, they mix the juice of tobacco with powdered shells, in the form of small balls, which they retain in their mouths, the gradual solution of which serves to counteract the uneasy craving of the stomach. In like manner we may explain the operation of spirit in taking away the appetite of those who are not accustomed to it, whilst those who indulge the habit receive its stimulant without its narcotic impression."

The Welsh Fasting Girl and her imitators were not the first to adopt this means of attracting attention to themselves, as the succeeding narrative will prove:—

"In a former visit to this place (Barmouth), July 18, 1770, my curiosity," says Pennant,† "was excited to examine into the truth of a surprising relation of a woman in the parish of Cyllyniz, who had fasted a most supernatural length of time. I took boat, had a most pleasant passage up the harbour, charmed with the beauty of the shores, intermixed with woods, verdant pastures, and corn-fields. I landed, and, after a short walk, found in a farm, called Tydden Bach, the object of my *excursion*, Mary Thomas, who was boarded here, and kept with great humanity and neatness. She was of the age of forty-seven, of a good countenance, very pale, thin, but not so much emaciated as might be expected from the strangeness of the circumstances I am going to relate. Her eyes weak, her voice low, deprived of the use of her lower extremities, and quite bed-ridden; her pulse rather strong, her intellects clear and sensible. On examining her, she informed me that at the age of seven she had some eruptions, like the measles, which grew confluent and universal; and she became so sore that she could not bear the least touch; she received some ease by the application of a sheep's skin, just taken from the animal. After this she was seized, at spring and fall, with swellings and inflammations,

* *The Study of Medicine*, by J. M. Good, M.D., &c.

† *Journey to Snowdon*, ii. 105-107.

during which time she was confined to her bed; but in the intervals could walk about, and once went to Holywell in hopes of cure.

“When she was about twenty-seven years of age she was attacked with the same complaint, but in a more violent manner, and during two years and a half remained insensible, and took no manner of nourishment, notwithstanding her friends forced open her mouth with a spoon to get something down; but the moment the spoon was taken away, her teeth met, and closed with snapping and violence; during that time she flung up vast quantities of blood.

“She well remembers the return of her senses, and her knowledge of everybody about her. She thought she had slept but a night, and asked her mother whether she had given her anything the day before, for she found herself very hungry. Meat was brought to her, but, so far from being able to take anything solid, she could scarcely swallow a spoonful of thin whey.

“From this she continued seven years and a half without any food or liquid, except sufficient of the latter to moisten her lips. At the end of this period she again fancied herself hungry, and desired an egg, of which she got down the quantity of a nut kernel. About this time she requested to receive the sacrament, which she did, by having a crumb of bread steeped in the wine. She at this time, for her daily subsistence, eats a bit of bread weighing about two pennyweights seven grains, and drinks a wine-glass of water, sometimes a spoonful of wine, but frequently abstains whole days from food and liquids.

“She sleeps very indifferently: the ordinary functions of nature are very small, and very seldom performed. Her attendant told me that her disposition of mind was mild, her temper even; that she was very religious, and very fervent in prayer—the natural effect of the state of her body, long unembarrassed with the grossness of food, and a constant alienation of thought from all worldly affairs.”

The startling case of a girl near Osnabruck is thus recorded by the *Encyclopædia Metropolitana*, vol. xiv., art. “Abstinence”:—

“A country girl, sixteen years old, in a village near Osnabruck, had enjoyed a good state of health during her childhood; and at about ten years of age she was seized with epileptic fits, against which a number of remedies were employed in vain. Since that time she was mostly confined to her bed, particularly in winter, but in summer she found herself a little better. From February, 1798, the alvine and urinary excretions began to cease, though she took now and then a little nourishment; but from the beginning of April of the same year, she abstained entirely from all food and drink, falling into an uninterrupted slumber,

almost senseless, from which she only awoke from time to time for a few hours. The sensibility during the time was so great that the slightest touch on any part of the body brought on partial convulsive motions. In this state she had continued for nearly ten months, when Dr. Schmidtman saw her first in March 1799. Though she had not taken the least nourishment during all this time, Dr. Schmidtman found her, to his utmost astonishment, fresh and blooming.

“For the last two months only the intervals of sleep began to be longer; her senses of sight and hearing were in perfect order, but her feeling she seemed to have quite lost, as she could suffer pinching of the arms and legs without pain; her gums bled frequently, and the pulse was scarcely perceptible in the arms, but beat strong and full in the carotids—about 120 in a minute. Dr. Schmidtman attempted to make her drink a little milk, but she protested she could not swallow it. The alvine and urinary excretions had quite ceased.

“Although there could hardly be a suspicion of any kind of imposition, the parents being honest people, yet, to remove all doubt, six sworn men were appointed from different places in the neighbourhood to watch her day and night, and instructions given to them accordingly. This being continued for a fortnight, the men were dismissed, having given evidence upon oath that the patient had never taken any food or drink whatever during that time, nor had any excrement, alvine or urinary. She had been once very ill, and nearly dying, seized with convulsions, feverish, and sometimes in a great sweat, which had the extraordinary property of turning water black. When Dr. Schmidtman saw her again, he found her quite recovered, not in the least emaciated, but rather looking lustier; her gums, however, still frequently bled, and her feeling was not yet returned, but her memory was not impaired, and she amused herself sometimes with reading and writing. No alvine or urinary excretions had taken place. Sometimes she was attacked with a sudden weakness, particularly after having bled from the mouth. During the last severe winter she could not endure the heat of the stove, because she felt then faint and oppressed.

“Dr. Schmidtman then enters into an inquiry by what means the patient in this case was nourished and maintained in that state in which she was found, and, having discussed the matter at large, he is of opinion that she drew, by resorption, such elementary particles from the atmosphere as were sufficient for the nutrition of the body, and that the excretions were likewise replaced by the skin.”

In the manuscript department of the British Museum, there is a quaint description of the fasting of Jane Hodge (Sloane MS. 4811), of which the following is a verbatim copy:—

“To the Rt. Honble. the Ld. Viscount Mountjoy.
At his house in Dublin.”

“I have enclos'd sent you an acct. of one Jane Hodge as near as I can; When she first fell into this melancholy she was about 36 years of age, she lived with a sister of her owne in the same Towne with me about the beginning of Nov: 1669 she went about a mile from her Sister's house on a Saturday and return'd the Munday following; when She came back She would not Speak to any body, she continued so till towards Christmas. Her relations took advice of one Gray a Physician and some other Doctors, who advis'd she should be Stript and severely whipt if she wou'd not Speak, which was accordingly done, but all to noe purpose. She never moved her countenance at all the ill usage She gott, nor never spoke a word to them. She continued Silent till the beginning of ffeb. but eat something all this while. about the 5th of ffebe. She quitt meat altogether, and kept her bed: Sometimes when she found the house quiet She would rise and walk about. This Acct. I had from her Sister and people that lived in the house with her: I living so near her went sometimes once a day and sometimes oft'ner to see her; and least She shou'd rise in the night and take meat She was put into a wast house, where there was a close Roome, where She continued from about the 10th of Aprile untill near midsummer following. Sometimes at night I have known her Sister to have left meat by her to try if she wou'd eat, and have seen it taken up the next morning untouch't, all the time she lay in the wast house She neither tasted meat nor drink, which was about 9 weeks; and her Sister and people of the house say; She was 9 weeks before She was clos'd up, that She neither eat nor drank. I saw her when She was put up in the wast house, and all that time you might See all the joynts of her back better, and fuller all her belly than back; the skin of her belly was clapt as close to her back as ever I Saw a carpet to a table. All the time She lay in the wast house She was never known to Voide Nature either one way or other; her eyes Stood in her head, Sometime you might observe them move, but very Seldome. There was a young man came to my house, and hearing of her desired to See her, I went along with him and when we came where She was; we Spoke to her, and threat'ned if She would not Speak to burn her; She took noe notice of us. I desired her Sister to put some Cloaths on her, and we wou'd either torment her or make her speak. Whilst her Sister was putting on some Cloath we made a fire, when she was brought thereto, Sometimes we threat'ned her, and offered to throw her in, and att other times

gave her good words; but she took noe notice of us. After we had tormented her by putting her hands on fiery coals, and heated the Tonges, and Straining open her mouth, and threat'ning to run them down her throat, She never Spoke a word, but Stooped Suddenly down & took a great part of the fire in her arms and cast upon us. we took her just then to Ardstraw Bridge, and hung her over the bridge by her arms a good while, She never took notice of us! when we Saw that wou'd not doe we carried her to a poole of water and cast her in as we coud; She came padding to the Shore; this we did 3 times after other, and the 3d time She was almost quite Spent. after this she had lyn a little on the Shore, She looked up and all we coud force her to, She told us we were a couple of wicked Spirits, when she was carried home, before we put her in the wast house, we tooke a great heap of Straw, and made a ring of it, and sett her in the middle of it, and fire to it in several places; She was noe more concern'd than those that looked on. I believe She wou'd have Suffered herself to dye in the fire had She not been pulled out. Before she quitt Eating She often Spake of one Capt Tho Stewart, and the first meat She Eat was from him. When he came to the house where she lay I was along with him, he asked her how She did (her back was to him and she turned her in the Bed, and She made answer that She was well, he asked her if she woud eat any thing; She said She wou'd eat from him, he caused to gett some meat, and She eat a little heartily, and wou'd have eaten more, had she not been prevented; Capt. Stewart then Spoke to her, and desired to know the cause of her fast. She desired the house Shou'd be cleared, and She wou'd Speak to him. wee all went oute; She then desired She Shou'd be carried to Newtown Stewart, and She wou'd discover it there. all She Said was that She fasted for the Sins of the people, and that She was the Saviour of the Nations. There was noe notice to be taken of anything She Said: She recovered Strength very soon, She continues very Melancholy Still. I have often come unawares and fired a gun, and She wou'd never look about her. She cares not for Staying long in one place Since. There are Severall that can give an account of these things, and many Ministers both Episcopall and Presbyterian, but particularly the Presbyterians; for She was much inclin'd that way. I believe this will tyre you before you read it. I am my Ld

“Yr Lps Humble Servt

“Causland.”

“Gilbert Jackson, of Carse Grange, Scotland, about fifteen years of age, in February 1716, was seized with a violent fever,

which returned in April for three weeks, and again on the 10th of June; he then lost his speech, his stomach, and the use of his limbs, and could not be persuaded to eat or drink anything. May 29th, 1717, his fever left him, but he was still deprived of speech and the use of his limbs, and took no food whatever. June 30th he was seized with a fever again, and the next day recovered his speech, but without eating or drinking, or the use of his limbs. On the 11th of October he recovered his health, with the use of one of his legs, but neither ate nor drank—only sometimes washed his mouth with water. On the 18th of June, 1718, the fever returned and lasted till September: he then recovered, and continued in pretty good health, and fresh coloured, but took no kind of meat or drink. On the 6th of June, 1719, he was again seized with a severe fever. On the 10th, at night, his father prevailed upon him to take a spoonful of milk boiled with oatmeal: it stuck so long in his throat that his friends feared he had been choked; but ever since that time he took food, though so little that a halfpenny loaf served him for eight days. All the time he fasted he had no evacuation; and it was fourteen days after he began to eat before he had any: he still continued in pretty good health.”

Of a date late enough to be remembered by most readers is the case of the Fasting Girl in Lancashire, Ellen Sudworth, concerning whom Dr. R. Sephton, of Culcheth, says*: “I was first called to see Ellen Sudworth, a girl aged eleven years, who resides with her parents about a mile from my house, on January 4th, 1870, and I had her under treatment for febricula and debility until March of the same year.

“After her recovery from this attack, she never seemed entirely to regain her usual spirits. When at school she was observed to mope, and in the family circle she never played or ran about as other children do.

“She continued in this state for some time; and early in June, 1871, I was again called in to attend her, and I then found her very low and weak, complaining of pain in the head of a throbbing character, which she likened to ‘the dropping of water on a stone.’ This headache and prostration continued for about six weeks, when she gradually lost her voice and expressed her feelings by signs; from this time she has never spoken until about ten weeks ago, when she suddenly exclaimed that something had burst in her head, and she felt afterwards able to speak. For two months prior to this recovery of speech, she did not open her eyes, and her parents state that blood frequently flowed from between her eyelids and from her mouth, but this I never saw, although I have examined her eyes

* *British Medical Journal*, 1876, i. 329.

and mouth frequently, and always found the mucous membrane pale, and the conjunctiva free from congestion. During the whole of this period, since July 1871, she has not partaken of any solid food, but has been supported with soups and milk puddings; therefore this case ought not to be called one of fasting. During the past five years she has been confined to her bed, except occasionally being carried to the couch. I have always considered this extraordinary case to be one of hysteria, only requiring moral treatment and discipline to effect a cure; and I am led to this conclusion by the absence of any disease to account for her peculiar symptoms. When I saw her in June, 1871, there was no increase of temperature either of the head or body; the pupils active, the tongue moist and clean, the stomach and bowels healthy, all the excretions normal; the pulse regular, full, slow, but weak. The catamenia commenced about two years ago, and have been (with one or two exceptions) perfectly regular and healthy. The respiration has generally been free, full, and regular—although, at times, it appeared almost to cease, and was then performed very slowly. The girl now, although very pale, is not half so emaciated as would be expected, after being in bed for so long a period. The only point of interest in this case is the persistency with which she has kept up this state, there not being any inducement for her to do so, as her condition was unknown to any except those in the immediate neighbourhood.” Dr. Sephton is evidently correct in treating this as a case of early and pronounced hysteria, to which class nearly all similar cases have been found to belong.

Among insane patients, refusal to take bodily nourishment is a common occurrence, and has to be met with prompt adoption of coercive measures. All disorders of the nervous system, and particularly those implicating the intelligence, have a damaging influence upon the functions of *nutrition*. In cases of simple anxiety of mind, how often do we observe the general health to become seriously impaired, and the assimilative powers to be completely paralysed! In the incipient stage of insanity the nutritive functions appear occasionally altogether suspended. The patient, long before attention is called to the state of the mind, loses flesh, and is occasionally reduced to a dangerous state of emaciation and inanition.

“The refusal to take nourishment,” says M. Morel, “often depends upon a disordered condition of the digestive organs. The truly wonderful obstinacy with which certain insane persons refuse food is, however, most commonly caused by their delirious ideas, such as a fear of poison, and a desire to die of hunger, in obedience to an order given them by a superior power.” M. Morel relates the case of a lady whom he had to

feed for several weeks by means of the stomach-pump, who refused to eat voluntarily, under the influence of an illusion that the food placed before her was composed of the flesh of her murdered children! Some insane patients complain of a fire that devours them, and sometimes of an icy coldness which paralyses the peristaltic action. They are subject to borborygmus and flatulence. All the phenomena that men enjoying their reason bring easily to a right interpretation, become among hypochondriacs the starting-point of most strange illusions. They have in their intestines unclean animals, who gnaw them; some even pretend to have neither stomach nor intestines. It seems to them that all they eat falls down a bottomless gulf. One patient imagines that she ought no longer to eat or speak. Her body no longer exists—it is one composed of shapeless fragments, which have no cohesion among them. Also her clothes are not attached to her person, and she constantly experiences a most painful sensation for a modest woman—she believes that she is going to be exposed naked to public view.* The presence of worms in the stomach and intestines often creates an uncontrollable indisposition for food. Chronic inflammation, and sometimes ulceration of the bowels, have been known to produce analogous symptoms. The appetite is frequently seriously vitiated and depraved. In these cases the patient has a morbid craving, and never-satisfied desire for food. After eating an enormous meal he will emphatically declare that he has been starved, or had supplied to him either the minimum amount of nutriment, or no food at all! A vitiation of the appetite is shown by the patient eating with an apparent relish, or at least indifference, the most repulsive and disgusting matters. The sense of taste in these cases occasionally appears to be paralysed. In the incipient stage of insanity the assimilative functions are often seriously disordered. Hence the emaciation so often observed to accompany not only the commencement of insanity, but of various organic diseases of the brain, uncomplicated with aberration of mind.

Dr. Briere de Boismont says in his article "On the Treatment of Melancholia, or Lypemania," published in this journal,† that "the refusal of food may sometimes depend upon separation from the domestic circle. In two cases, in which this cause was clearly proved to me to exist, I sent away the patients to their homes, and this course was attended with success. In another case, after improvement for a few days, death super-

* Morel.

† New Series, vol. i. pp. 35, 36.

vened. It happens, on the other hand, that melancholic patients, who would not take any food from the hands of their relatives, take it when they are sent to an asylum, and the apprehensions they entertained then disappear. A young man from the provinces, who had abstained from every kind of food for five days, sat down to table as soon as he came to the asylum, and at the end of ten days he completely recovered.

“A happy thought, as I have already observed, may be sufficient to overcome this obstinate refusal of food. A patient presenting symptoms of imbecility, and who had not spoken for three or four months, suddenly ceased to eat, and this abstinence was prolonged for six days. This case occurred at the beginning of my career, and the family, being alarmed, requested me to call in Esquirol in consultation. This distinguished physician prescribed some medicine, but especially recommended that the patient should be immediately taken into the country, in order to divert his ideas. It was six o'clock, and I had a few friends to dinner. We sat down to table, and I took it into my head to have the patient brought in. At the sight of more numerous dishes, and food more delicately prepared than usual, he smiled, took what was offered to him, and ate with a good appetite. The crisis was over, and did not re-appear. What is most surprising is, that this patient, whom we had believed to be imbecile, was restored to reason several years afterwards.”

Erasmus Darwin relates in “Zoonomia” that “a clergyman about forty years of age, who was rather a weak man, happened to be drinking wine in jocular company, and by accident swallowed part of the seal of a letter which he had just then received. One of his companions, seeing him alarmed, cried out in humour, ‘It will seal your bowels up.’ He became melancholy from that instant, and in a day or two refused to swallow any kind of nourishment. On being pressed to give a reason for this refusal, he answered he knew nothing would pass through him. A cathartic was given, which produced a great many evacuations, but he still persisted that nothing passed through him; and though he was frightened into taking a little broth once or twice by threats, yet he soon ceased entirely to swallow anything, and died in consequence of this insane idea.” And that “Miss —, a sensible and ingenious lady, about thirty, said she had seen an angel, who told her that she need not eat, though all others were under the necessity of supporting their earthly existence by food. After fruitless persuasions to take food, she starved herself to death. It was proposed to send an angel of a higher order to tell her that now she must begin to eat and drink again, but it was not put into execution.”—*Zoonomia*, by Erasmus Darwin, 3rd ed., vol. iv. page 66.

“A French officer of infantry, who had retired from the service and become deranged, took it into his head to refuse food, and continued in that determination from the 25th of December till the 9th of February, drinking only about a pint and a half of water daily, with a few drops of aniseed-liquor in each glass, till the thirty-ninth day, from which time till the forty-seventh day he took nothing whatever. Till the thirty-eighth day, too, he remained out of bed, but weakness at length obliged him to lie down. The return to food was followed by a temporary cure of his insanity.”—From the *Hist. de l'Academie des Sciences*, 1769, p. 45.

The influence of diet on the life of the individual is one, the importance of which needs no enforcing; but it is not always that the full force of the relation between food and health is perceived. Most people are willing to admit the advantage of an abstemious régime while failing to observe it. The efficacy of it in promoting longevity rests, however, on incontrovertible authority. Some of those we have collected may not be wholly trustworthy, but, even in our own day, instances of long lives, and healthy ones, reached by the simple-faring inhabitant of country districts, are numerous enough to be received without doubt.

According to Virgil, Dido gives Æneas and his companions a most splendid entertainment, as far as numerous attendants constitute one; but the poet mentions nothing that the heroes had to eat except *bread*; whatever else was got for them he includes in the general term *Dapes*, which, in other parts of the *Æneid*, is applied to all the coarse fare already mentioned. As the luxury of mankind increased, their lives shortened. The half of *Abraham's* age became regarded as a stretch, far beyond the customary period. So in profane history we find that when the arts of luxury were unknown in *Rome*, its seven kings reigned a longer term than afterwards, upon the prevalency of those arts, was completed by its first twenty emperors. Such persons, indeed, among the ancients, whose precepts and practice most recommended temperance in diet, were eminent instances of the benefit accruing from it, in the health preserved and long life attained by it.

Gorgias lived 107 years. Hippocrates reached, according to some writers, his 109th. Pythagoras, of whom it was observed that he was never known to eat to satiety, lived to near 100 years—if Iambicus may be credited; D. Laertius says that, according to most writers, he was, when he lost his life, in his 90th year. Out of his school came Empedocles, who lived, as some say, to 109; and Xenophilus, who lived to above 105. Zeno lived to 98; his disciple and successor, Cleanthes, to 99. Diogenes, when he died, was about 90. Plato reached his 81st

year, and his follower, Xenocrates, his 84th. Lycurgus, the lawgiver of the Lacedæmonians, who, when they obeyed their laws, were not less distinguished by their abstemiousness than by their fortitude, lived to 85; and their king Agesilaus* took pay of Tachos at 80; afterwards assisted Nectanebos; and, having established him in his kingdom, died, on his return to Sparta, at 84. Cato, the Censor, is introduced by Tully representing himself as, when in his 84th † year, able to assist in the Senate, to speak in the assembly of the people, and to give his friends and dependents the assistance which they might want from him.

Lucian introduces his account of long-lived persons with the observation that it might be of use as showing that they who took the most care of their bodies and minds lived the longest and enjoyed the best health. To come nearer to our own times: the discovery of a new world has confirmed the observations furnished by the old, that in those countries where the greatest simplicity of diet has been used, the greatest length of life has been attained.

Of the ancient inhabitants of Virginia we are told "that their chief dish was maize, and that they drank only water: that their diseases were few, and chiefly proceeded from excessive heats or colds. Some of them lived to upwards of 200 years."—(Purchas, Samuel), his *Pilgrims*, vol. v. p. 946.

"The sobriety of the ancient inhabitants of Florida lengthened their lives in such sort that one of their kings, says Morgues, told me he was three hundred years old, and his father, whom he then showed me alive, was fifty years older than himself." (*Ibid.*, vol. v. p. 961.) And if we now search after particular instances of persons reaching to extreme old age, it is certain that we must not resort for them to courts and palaces, to the dwellings of the great or the wealthy, but to the cells of the religious, or to cottages—to the habitations of such whose hunger is their sauce and to whom a wholesome meal is a sufficiently delicate one.

"Martha Waterhouse, of the township of North Bierley, in Yorkshire, died about the year 1711 in the 104th year of her age. Her maiden sister, Hester Fager, of the same place, died in 1713, in the 107th year of her age. They had both of them *relief* from the township of Bierley nigh fifty years."—*Abridgment of Philosophical Transactions*, by Jones, vol. ii. p. 115.

T. Parr.—"Dr. Harvey, in his 'Anatomical Account of

* *Plutarch*, vol. i. 596. See also p. 616.

† *De Senectute*, s. 10.

T. Parr,' who died in the 153rd year of his age, says that if he had not changed his diet and air, he might perhaps have lived a good while longer. His diet was old cheese, milk, coarse bread, small beer, and whey."

Hy. Jenkins.—Dr. T. Robinson says of H. Jenkins, the fisherman, "who lived 169 years, that his diet was coarse and sour."

Dr. M. Lister, having mentioned several old persons of Craven, in Yorkshire, says: "The food of all this mountainous country is exceeding coarse."—*Abridgment of Philosophical Transactions*, by Lowthorp, vol. iii. p. 307, &c.

Plutarch mentions our countrymen as in his time growing old at 120. To account for this, as he does, from their climate, seems less rational than to ascribe it to their way of living as related by Diodorus Siculus, who tells us that their diet was simple, and that they were utter strangers to the delicate fare of the wealthy.

Stobæus calls drunkenness "the study of madness," and Seneca, "Nihil aliud est ebrietas quam voluntaria insania," or "inebriety is nothing else but voluntary insanity."

"Buchanan writes that one Lawrence preserved himself to 140 by force of temperance and labour; and Spotswood mentions one Kentigera, afterwards called St. Mongah or Mungo, who lived to 185 by the same means."—*Wilkes's Encyclopædia Londoniensis*, art. "Abstinence."

The *Oxford Cyclopædia* remarks:—

"It is indeed surprising to what a great age the primitive Christians of the East, who retired from the persecutions into the deserts of Arabia and Egypt, lived healthful and cheerful, on a very little food.

"Cassain assures us that the common rate for twenty-four hours was 12 ounces of bread and pure water: with such frugal fare St. Anthony lived 105 years, James the Hermit 104, Arsenius, tutor of the Emperor Arcadius, 120, St. Epiphanius 115, Simon the Stylite 112, and Ronauld 120."

Swift indicates approval of abstinence in the following epigram from the French on

RELIGIOUS FASTING:—

Who can believe with common sense,
A bacon slice gives God offence;
Or, how a herring hath a charm
Almighty vengeance to disarm?
Wrapt up in majesty divine,
Does He regard on what we dine?

On the same subject these verses were written by Skelton, poet-laureat to Henry VIII., and who is styled by Erasmus the 'light and ornament of English scholars:—

Men call you therefore profanes,
 Ye picke no shrympes, nor pranes,
 Salt fish, stock-fish, nor herring,
 It is not for your wearing,

Nor in holy Lenton season,
 Ye will neither beanes ne peason ;
 But ye look to be let loose
 To a pygge or to a goose.

Moderation is a term which will never receive a definition unanimously approved. It was certainly not so at the time when the Fat and Lean Clubs were instituted and in force, as thus described in the ninth number of the *Spectator*:—

“The room where the *fat* club met was something of the largest, and had two entrances—the one by a door of moderate size, and the other by a pair of folding-doors. If a candidate for this corpulent club could make his entrance through the first, he was looked upon as unqualified ; but if he stuck in the passage, and could not force his way through it, the folding-doors were immediately thrown open for his reception, and he was saluted as a brother. I have heard that this club, though it consisted but of fifteen persons, weighed above three ton. In opposition to this society, there sprung up another, composed of scarecrows and skeletons, who, being very meagre and envious, did all they could to thwart the designs of their bulky brethren, whom they represented as men of dangerous principles ; till at length they worked them out of the favour of the people, and consequently out of the magistracy. These factions tore the corporation in pieces for several years ; at last they came to this accommodation : that the two bailiffs of the town should be annually chosen out of the two clubs, by which means the principal magistrates are, at this day, coupled like rabbits—one fat and one thin.”

Dr. Erasmus Darwin was quick to perceive the injurious effects produced by excess in either direction, and thus wrote:—

“It is curious, and it is highly important to bear in mind, that abstinence and excess produce symptoms so nearly alike, that it requires the utmost care and sagacity on the part of the physician to distinguish the one case from the other ; and as the one requires opposite remedies from the other, a mistake may be fatal, and must be injurious.”

Of “Anorexia,” or Want of Appetite, he observes : “Some elderly people, and those debilitated by fermented liquors, are liable to lose their appetite for animal food, which is probably in part owing to the deficiency of gastric acid, as well as to the general decay of the system. Elderly people will go on years without animal food ; but inebriates soon sink when their digestion

becomes so far impaired. Want of appetite is sometimes produced by the putrid matter from many decaying teeth being perpetually mixed with the saliva, and thence affecting the organs of taste, and greatly injuring the digestion.* All the strength we possess is ultimately derived from the food which we are able to digest; whence a total debility of the system frequently follows the want of appetite, and of the power of digestion. Some young ladies I have observed to fall into this general debility, but so as but just to be able to walk about, which I have sometimes ascribed to their voluntary fasting, when they believed themselves too plump; and who have thus lost both health and beauty by too great abstinence, which could never be restored. I have seen other cases of what may be termed *anorexia epileptica*, in which a total loss of appetite and of the power of digestion suddenly occurred, along with epileptic fits. Miss B., a girl about eighteen, apparently very healthy and rather plump, was seized with fits, which were at first called hysterical; they occurred at the end of menstruation, and returned very frequently, with total loss of appetite. She was relieved by venesection, blisters, and opiates; her strength diminished, and after some returns of the fits, she took to her bed, and has survived fifteen or twenty years; she has in general eaten half a potato a day, and seldom speaks, but retains her senses, and had many years occasional returns of convulsion. I have seen two similar cases, where the anorexia or want of appetite was in less degree, and but just so much food could be digested as supplied them with sufficient strength to keep from the bed or sofa for half a day. As well as I can recollect, all these patients were attended with weak pulse and cold, pale skin, and received benefit by opium, from a quarter of a grain to a grain, four times a day."

The effect of diet is markedly shown in the following extract from the *English Cyclopædia*, 1859:—

"Some time ago an alarming epidemic broke out in the Millbank Penitentiary, London. The prisoners confined in this prison were suddenly put upon a diet from which animal food was almost entirely excluded. An ox's head, the meat of which weighs eight pounds, was made into soup for one hundred people, which allows one ounce and a quarter of meat to each person. The prisoners were at the same time subjected to a low degree of temperature, to considerable exertion, and were confined within the walls of a prison situated in the midst of a marsh, which is below the level of the adjoining river. The consequences were, first, loss of colour, of flesh, and of strength;

* Here follow Dr. Darwin's prescriptions—one of which is the bile of an ox inspissated and made into pills, 20 grains to be taken before dinner and supper.

next this simple debility of constitution was succeeded by various forms of disease—scurvy, dysentery, diarrhœa, low fever; and, lastly, affections of the brain and nervous system—namely, headache, vertigo, delirium, convulsions, apoplexy, and even mania. When bleeding was tried, the patients fainted, after losing five, four, or even fewer ounces of blood. Abstinence will sometimes produce a train of symptoms exactly similar to those of the disease which it is employed to remove. Persistence in the abstinence will aggravate the malady, which will baffle every mode of treatment as long as the abstinence is persevered in: but which will disappear with surprising rapidity on the administration of a generous diet. This is especially the case with those affections of simple irritation which assume the appearance of inflammation, and which are attended with headache, noise in the ears, giddiness, restlessness, sleeplessness, and delirium.

“A professional man was seized with fever; rigid abstinence was enforced, not only during the continuance of the fever, but also during the stage of convalescence. Delirium, which had been present at the height of fever, recurred in the convalescence. A physician of eminence in maniacal cases was consulted, who recommended him to be removed to a private asylum. Before his advice was carried into effect, another physician saw him; a different treatment and regimen, with a gradual increase of nourishment, were adopted; the patient was well in a few days, and within a fortnight returned to his professional avocations.”

The condition of the stomach, its tolerance, or desire for food, is intimately dependent on the treatment it has been subjected to, that is, whether its functions have been abused. There are many examples of the kind to be found in every medical treatise, and the practice of the consulting physician is rich in proofs of the influence exerted by good or bad treatment of this important organ of the body. The effects, moreover, produced on other organs through it are among the most interesting phenomena exhibited in the history of disease, the intimate relation of the stomach to other parts of the frame being such as to bring about an immediate disturbance of vitality under abnormal conditions. Thus, a man addicted to drunkenness was cast into prison for theft, and reduced at once to a diet of bread and water. After the first week, a disorder of the intellectual faculties took place, his countenance became pale and expressive of languor, his flesh wasted, and his strength declined; his nights were sleepless; shortly afterwards there was delirium, which was mild at first, but subsequently furious. These symptoms might have been easily mistaken for those which denote

inflammation of the brain, but the true nature of the affection was discriminated, and brandy was administered. Immediately the affection of the brain disappeared, and the flesh and strength returned.

The following case from *The Economy of Health*, by James Johnson, M.D., published in 1837 (p. 137 *note*), illustrates also the sympathy to which attention has been drawn :—

“The sister of the celebrated Mrs. Siddons (Mrs. Whitlock) died under the care of the author (James Johnson, M.D.), from *starvation*, without its attendant sufferings of hunger and thirst. An aneurismal enlargement of a vessel in the brain, pressed upon the origins of two particular nerves—the eighth and ninth—those which give power to speech, swallowing, and digestion. The consequence was, an inability to speak, to swallow, and to digest. Fortunately, the paralysis of one of these nerves (the eighth) prevented the sense of hunger, and though this unfortunate lady lived five weeks after the failure of swallowing was complete, she suffered not from either hunger or thirst! During all this time the faculties of the mind and the *other* functions of the body were unaffected. She was 76 years of age.”

In the same connection we may regard the influence of diet as shown in the effects produced by improper food or its irregular supply, many observations having been made on the subject from time to time by medical and scientific writers; the following from a treatise on Diet, by Dr. F. A. Paris, F.R.S., is even now well worthy of attention. The crude physiology of certain of the inferences will be unacceptable in this day, but the philosophy of the passage (pp. 70–71, edition 1826) is still sound :—

“The celebrated Mr. Spalding observed that whenever he used a diet of animal food, or drank spirituous liquors, he consumed in a much shorter time the oxygen of the atmospheric air in his diving-bell; and he, therefore, had learnt from experience to confine himself upon such occasions to vegetable diet. He also found the same effect to arise from the use of fermented liquors: and he accordingly restricted himself to the potation of simple water. The truth of these results is confirmed by the habits of the Indian pearl-divers, who always abstain from every alimentary stimulus previous to their descent into the ocean. Those physicians who have witnessed the ravages of pulmonary disease will readily concur in the justness of these views. The experiments of Dr. Prout would lead us to the conclusion that less carbonic acid is given off from the lungs during the influence of an alcoholic stimulant; but he justly observes that this may arise from its specific action upon the nerves; and, indeed,

it appears probable, that the evolution of carbon from the blood is determined by nervous energy.* The principal changes which the chyle undergoes during its passage through the respiratory organs appear to consist in the most perfect elaboration of some of its principles; for instance, the albumen is converted into fibrin, and the colouring matter acquires its more decided characteristics. But these changes may be in a great measure produced by the action of the pulmonary vessels. It has been estimated that about eleven ounces of carbon and twenty ounces of water are given off by the lungs during the twenty-four hours; but what portion of these products are to be placed to the account of the aliment has not been ascertained. It does not even appear that the useless carbon is always evolved from the blood during its passage through the organs; it may be retained for want of sufficient nervous energy, and thus produce a morbid change upon the body. The quantity of pulmonary transpiration is also influenced by various circumstances, especially the liquid nature of the food, and the quantity of fluids taken into the stomach. I have paid some attention to this circumstance, for it suggests many important links in the treatment of disease. (See *Pharmacologia*, by F. A. Paris, M.D., 9th edition, 1843.) The only safe conclusion at which we can arrive upon this intricate subject, may be embodied in the following canons: viz., 1st—that animal food proves more stimulant to the lungs than vegetable aliment. 2nd—That fermented liquors are injurious to these organs, both on account of their general effects upon the circulation, and their specific action upon the nervous system; increasing on the one hand the necessity of respiratory changes, and on the other diminishing the energies of the organs by which they are accomplished. 3rd—That moderate exercise, hilarity of mind, free ventilation, and abstinence from fermented liquors, are essentially necessary in that stage of the digestive process at which the chyle is poured into the blood-vessels, in order to promote the free evolution of carbonic acid."

The following pithy extract from the *Cyclopædia of Practical Medicine*, edited by John Forbes, M.D., &c., Alexander Tweedie, M.D., and John Conolly, M.D., Vol. 1, though originally published in 1833, is in accord with existing knowledge:—

"A man addicted to drunkenness was cast into prison for theft, and reduced, at once, to a diet of bread and water. After the first week a disorder of the intellectual faculties took place; his countenance became pale and expressive of languor, his

* The experiments of Drs. Prout and Fyfe have clearly shown, that, whatever depresses the nervous energy, diminishes the quantity of carbonic acid expired. The depressing passions, violent and long-continued exercise, low diet, mercurial irritation, and spirituous liquors, uniformly produce this effect. The quantity is also, for the same reason, diminished during sleep.

flesh wasted, and his strength declined; his nights were sleepless; shortly afterwards there was delirium, which was mild at first, and subsequently furious. The prisoner was allowed brandy. The cerebral symptoms disappeared, and the flesh and strength returned. The effects of abstinence and of an amelioration in the diet are so obvious in this brief case that it is full of instruction. Abstinence and excess induce *similar* symptoms and effects; a fact which cannot be too deeply impressed upon the mind of the young practitioner. Good says in his *Study of Medicine**: "The desire for food, or the sense of hunger is very painful for the first three or four days, after which it ceases, and does not return unless stimulated by fresh food. The Chipecywans, or native savages of Canada, according to Mr. Long, give striking proofs of the power of the stomach in both extremes—that of hard eating and that of hard fasting—and, as nearly as may be, at the same time: for when one of these is on the point of commencing a journey, he devours as much as he would otherwise take in a whole week; the daily allowance of animal food alone being, on such occasions, as Captain Franklin tells us, eight pounds;† and, and having gorged the stomach, he starts upon his expedition, and commences a long season of severe abstinence."

In certain constitutions there is a marvellous power of control over the stomach, which can be exerted at will, the details of which scarcely seem credible. For instance, Dr. Erasmus Darwin narrates the story of a person, "who had gained a voluntary command over these inverted motions of the stomach and throat, and supported himself by exhibiting this curiosity to the public. At these exhibitions he swallowed a pint of red rough gooseberries and a pint of white smooth ones, brought them up in small parcels into his mouth, and restored them separately to the spectators, who called for red or white as they pleased till the whole were redelivered."

"All those drugs which, by their bitter or astringent stimulus, increase the action of the stomach, as camomile and white vitriol, if their quantity is increased above a certain dose, become emetics."

The student of mental diseases is in a good position for estimating the effect of fasting on the animal frame. There are few among the patients who pass under his notice that do not, at some time or other, exhibit the features peculiar to this condition, the records of asylum physicians are full of them, and there are to be found in them the accounts of phases and moods that will repay minute investigation. The literature of

* *The Study of Medicine*, by John Mason Good, fourth edition, Vol. i. p. 110.

† *Journey to the Shores of the Polar Sea in 1819-22*, p. 250. London, 4to. 1823.

this branch of the subject is too rich for extensive quotation, but the subjoined excerpts are likely to be valuable. Religious monomania, it should be particularly noted, is a frequent cause of the fasting propensity, and perhaps Cornaro's apothegm that "of all the parts of the feast that which one leaves does one most good," commends itself with especial force to this class of insane people.

Mental alienation has a marked influence in prolonging the period during which life can be sustained without food. Dr. M'Naughton, of Albany (*American Journal of Medical Science*, vol. vi. p. 543), gives a similar instance, during which a young man lived fifty-four days on water alone. And in a case read in the French Academy (*Archives générales de Médecine*, tome xxvii., p. 130) a suicide lived sixty days on nothing but a few mouthfuls of orgeat syrup, before death put an end to his sufferings.

. . . . When persons are immured by the falling in of a mine, quarry, &c., they seem subdued by the darkness; but in cases of starvation after shipwreck, or in travelling through an uncultivated country, the worst passions are aroused, and suspicion and ferocity add to the torments of hunger. A high temperature seems to aggravate these passions. "It is impossible to imagine," says M. Savigny, in speaking of the wreck of the "Medusa," "to what a degree the circulation is quickened under exposure to the burning sun of the equator. The pain of my head was intolerable; I could scarcely master the impetuosity of my movement; to use a well-known phrase, the blood boiled in my veins; all my companions suffered from the same excitement;" and the terrible scenes of blood and crime which passed upon the raft were doubtless owing largely to this cause. On examination after death the bodies of those dying from starvation are found to be almost bloodless, except the brain, which contains its usual quantity, and completely destitute of fat. The various organs, with the exception of the brain, are all reduced in bulk, and the coats of the intestinal canal especially are rendered thinner. M. Chossat (*Recherches expérimentales sur l'aninition*) deprived a number of animals (birds and small mammals) of all sustenance, and carefully observed the phenomena that followed, and his experiments throw much light upon the subject of starvation. The temperature in all the animals was maintained at nearly the normal standard until the last days of life, when it began rapidly to fall. The animals, previously restless, now became quiet, as if stupefied; they fell over on their sides, unable to stand; the breathing became slower and slower, the pupils dilated, the insensibility grew

more profound, and death took place either quietly or attended with convulsions. If, when these phenomena were fully developed, external warmth was applied, the animals revived, their muscular force returned, they moved or flew about the room, and took greedily the food that was presented to them. If now they were again left to themselves, they speedily perished; but if the external temperature was maintained until the food taken was digested (and from the feeble condition of their digestive organs this often took many hours) they recovered. The immediate cause of death seemed to be cold rather than starvation. The average loss of weight in the animals experimented was 40 per cent., varying considerably in different cases, the variation depending chiefly on the relative amount of fat. Weighing the different tissues separately, and arranging them in two parallel columns, according as they lost more or less than 40 per cent., gave the following results:—

Parts losing more than 40 per cent.

Fat	93·3
Blood	75
Spleen	71·4
Pancreas	64·1
Liver.	52
Heart	44·8
Intestines	42·4
Muscles of voluntary motion	42·3

Parts losing less than 40 per cent.

Muscular coat of stomach	39·7
Pharynx and œsophagus	34·2
Skin	33·3
Kidneys	31·9
Respiratory organs	22·2
Bones	16·7
Eyes	10
Nervous system	1·9

In Ferriar's "Theory of Apparitions" a lunatic is declared to have believed that he had swallowed a demon, and had retained him in his stomach. He resisted the calls of nature during several days, lest he should set the foul fiend at liberty. His resolution was overcome, however, by administering an emetic in his food.

Within the last week or two a voluntary victim to an hallucination, the same in kind as the above, succumbed to death after a lengthy trial of water as a preservative of life. This patient, a bookseller, named George Alvesbury, refused all food, saying that "the spirits" were his guardians, and would keep

him alive. A coroner's jury, while expressing their conviction that the unhappy lunatic died from want of food, yet attributed his death to misadventure; but even their verdict cannot remove the assurance that spiritualism is not, alone, sufficient to maintain existence. That the encouragement of delusions, however, is a fruitful source of disease is sufficiently well proved. Indeed, all improper treatment of the person is attended with imminent risk to itself—a risk measured by individual susceptibility in each case. In forced abstinence this is always shown, and attention is drawn to it in the article on "Abstinence," in Ripley and Dana's *American Cyclopædia*, thus:—

"Among the most noteworthy phenomena caused by starvation are the offensive effluvia exhaled from the sufferers, the fetor of their discharges, and the rapidity with which the body passes into a state of putrescence. Such a condition of things is peculiarly favourable to the reception of fever and other contagious diseases, and they acquire in such cases an intensity and virulence rarely seen under other circumstances. Thus, as was seen in Ireland in 1847, pestilence follows in the train of famine. The effects of the prolonged employment of an insufficient diet alone are rarely seen; they are commonly complicated with those of unwholesome air and over-exertion. Of such complication prisons, workhouses, and charitable institutions have afforded abundant examples on a large scale. One of the most noted of these occurred at the Millbank Penitentiary, near London, in 1823." (See page 279.)

"Another well-authenticated epidemic, owing to a similar cause, occurred in the establishment for the destitute children of New York, at what was termed the Long Island Farms, in the winter of 1839–40. The diet of the children consisted of bread of an inferior quality, with molasses, night and morning, and soup made from coarse beef, alternately, with the beef itself at noon; in addition, the dormitories of the children were crowded and ill-ventilated, and they had scarcely any out-door exercise. 'About the middle of December, 1839,' says Dr. Morrell, the attending physician of the Asylum (*New York Journal of Medicine and Surgery*, vol. iii.), 'evidences of a constitutional change in many of the children were apparent; they were dull and inactive, their eyes lacked lustre, and their skins exhaled an offensive odour.' Next, many of them were attacked with slight cholera morbus, and afterwards an incurable diarrhœa set in, attended with gangrene about the cheeks, the anus, or vagina. In most of these cases sloughing of the cornea took place, and the eye was destroyed. When, for a length of time, the allowance of food, either from its indigestibility or from its limited amount, has been insufficient for the wants of the system, the digestive organs are weakened

the appetite is lost, and the person often loathes food while he is suffering from starvation. In the experiments of Chossat, when turtle-doves were placed upon a limited allowance of corn, but with access to water, part of the corn was either rejected by vomiting, accumulated in the crop, or passed unchanged through the bowels."

There is a good deal yet to be learned from the study of the natural starvation to which animals are periodically subjected, and this has been held in view by most of the philosophical naturalists who have paid attention to the subject in the past. The progress we have made is not so much an increase in the actual amount of our information, as by the better understanding of such facts as have come within our cognisance. In the old *Encyclopædia Metropolitana* we find it stated, "Though it is no improbable opinion that the air itself may furnish something for nutrition, it is certain there are substances of all kinds, animal, vegetable, &c., floating in the atmosphere, which must continually be taken in by respiration. And that an animal body may be nourished thereby is evident in the instance of vipers, which, if taken when first brought forth, and kept from everything but air, will yet grow very considerably in a few days. So the eggs of lizards are observed to increase in bulk, after they are produced, though there be nothing to furnish the increment but air alone; in like manner as the eggs or spawn of fishes grow and are nourished with the water."

"Dr. Shaw speaks of a couple of cerastes (a sort of Egyptian serpent), which had been kept five years in a bottle close corked, without any sort of food, unless a small quantity of sand, wherein they coiled themselves up in the bottom of the vessel, may be reckoned as such; yet when he saw them, they had nearly cast their skins, and were as brisk and lively as if just taken. . . .

"Sir G. Ent weighed his tortoise several years successively, at its going to earth in October, and coming out again in March, and found that, of four pounds four ounces, it used only to lose about one ounce."

These facts, of course, speak in favour of the assumption that the process of starvation is a slower one in degree as the starving animal is more lowly organised, and we are from this not unprepared to accept the assertions contained in the *Encyc. Brit.*, 8th ed., art. "Animal Kingdom," that "Of many individuals exposed to an absolute abstinence of many days, the young are always the first to perish. Of this the history of war and shipwreck offers in all ages too many frightful examples. . . . Captain Bligh, of the 'Bounty,' sailed nearly 4,000 miles in an open boat, with occasionally a single small bird, not many ounces in weight, for the daily sustenance of

17 people; and it is even alleged that 14 men and women of the 'Juno,' having suffered shipwreck on the coast of Arracan, lived 23 days without any food. Two people first died of want of food on the fifth day. In the opinion of Rhedi, animals support want much longer than is generally believed. A civet cat lived 10 days without food, an antelope 20, and a very large wild cat also 20; an eagle survived 28 days, a badger one month, and several dogs 36 days. In the 'Memoirs of the Academy of Sciences' there is an account of a bitch, which, having been accidentally shut up alone in a country house, existed for 40 days without any nourishment than the stuff on the wool of a mattrass which she had torn to pieces. A crocodile will live two months without food, a scorpion three, a bear six, a chameleon eight, and a viper ten. Vaillant had a spider that lived nearly a year without food, and was so far from being weakened by abstinence that it immediately killed another large spider, equally vigorous but not so hungry, which was put along with it. John Hunter enclosed a toad between two fire-pots, and found it as lively as ever after 14 months. Land tortoises have lived without food for 18 months, and Baker is known to have kept a beetle in a state of total abstinence for three years. Dr. Shaw gives an account of two serpents which lived in a bottle without any food for five years."

The power of dogs to live beyond the thirty days without food is well authenticated by several witnesses in very recent times, the daily papers having, during the present year, contained accounts of animals unintentionally shut up in rooms while their owners have been away from home, and, on being released, found still alive, but frightfully emaciated. Other species of the animal world, too, not usually supposed to be good fasters, share the power of prolonged abstinence. Vol. II. of the *Transactions of the Linnæan Society* contains a most interesting account of instances. The following passage will repay perusal:—

"The mere air of the atmosphere appears to afford nourishment enough for many forms of animal life. Snails and chameleons have been often known to live upon nothing else for years. Garman asserts it to be a sufficient food for the greedy spider, and tells us that, though the spider will ravenously devour flies and other prey whenever he can seize it, he will not starve upon the spare regimen of air alone. Latreille confirms this assertion by an experiment of his own. He stuck a spider to a piece of cork and cut him off from all food whatever for four months; at the end of which period he appeared to be as lively as at first. Mr. Baker, in like manner, confined a beetle under a glass for not less than three years, allowing him nothing but air for his diet. At the expiration of this period he was not only

alive, but fortunate enough to effect his escape, and go in pursuit of a more substantial repast. And we are hence prepared to receive, with less hesitation than we should otherwise do, the wonderful tales of frogs, toads, and lizards, and other reptiles found imbedded in trunks of trees or blocks of marble, so deeply seated that, though exhibiting life and activity on exposure to the atmosphere, they must have been blocked up in their respective cavities for fifty, and, in some instances, for a hundred years, cut from every kind of food except the moisture by which perhaps they have been surrounded and from all communication with the atmosphere itself; though, from experiments lately made by Dr. Edwards, it is absolutely necessary that there be an indirect communication of air through the pores or some other opening of the surrounding substance.* Fishes, when rendered torpid by being suddenly frozen, are well known to live in this manner through the winter in the Polar Seas, and to be re-quickened into activity by the returning warmth of the summer. 'The fish,' says Captain Franklin, describing the winter he passed at Fort Chipewyan, on the skirts of the Polar Sea, 'froze as they were taken out of their nets, and in a short time became a solid mass of ice; and by a blow or two of the hatchet were easily split open, when the intestines might be removed in one lump. If in this completely frozen state they were thawed before the fire, they recovered their animation. This was particularly the case with the carp. We have seen a carp recover so far as to leap about with much vigour after it had been frozen for thirty-six hours.' It may possibly be observed that these examples are drawn, for the most part, from cold-blooded or exsanguineous animals, and that, in such cases, there is no waste of living matter by the skin, the great vehicle of discharge in animals of a higher rank. But they are drawn from animals that, in their common customs and habits, have the same instinctive craving for food, and the same faculty for converting it into their own substance, by the process of digestion, as animals of any superior class; while a like power of enduring long periods of fasting in a state of inactivity, without any injury to the general health, is quite as conspicuous and incontrovertible in many kinds of warm-blooded animals, and especially those that sleep through the winter season. (A combination of circumstances is generally essential to the occurrence, such as a diminution of sensibility and animal heat, a suspension of many of the functions, and especially a stoppage of the secretions and excretions. In this condition, individuals have been known to remain several weeks, and even whole months, without taking any food. Such cases are rare in the

* Quoted in *The Study of Medicine*, by John Mason Good, M.D., &c., 4th edition, vol. i. p. 112.

human race, but certain animals present us with annual examples of them. At the approach of winter, when they are large and fat, they fall into a torpid state, and continue so until the warmth of spring returns . . . A hog, weighing about 160 lbs., was buried in its sty, for 160 days, under a great mass of the chalk of Dover cliff. When dug out, it weighed only 40 lbs. No food or water happened to be in the sty when the portion of the cliff fell. The animal had nibbled the wood of the sty, and eaten some loose chalk, which, from the appearance of the excrement, had passed more than once through the body.)”

VORACITY.

Not long after Dr. Tanner concluded his performance as a faster, another American claimant for universal fame entered on the task of “eating” to excess; the result of the foolish attempt has not been made known, but we are not without scientific evidence that a wonderful consumption of food has ere now been accomplished. The *Philosophical Transactions*, vol. xliii., for 1744, contains the account of a voracious boy, whose capacities might have been subject of envy for even Mr. Pickwick’s aversion—the “fat boy.” The narrative consists of an “extract of a letter from Mr. B—— B——r, containing an account, in pounds and ounces, of the surprising quantities of food devoured by a boy, twelve years old, in six successive days, who laboured under a ravenous appetite, at Black Barnsley, in Yorkshire. Communicated by Dr. Mortimer, Secretary, R.S. (Read April 25, 1745.)

“The boy was regular as other children till about a year ago, when this extraordinary craving of appetite first began, which afflicts him to such a degree that (they tell us) if he was not fed as he calls out for it, he would gnaw the very flesh off his own bones; so that, when awake, he is constantly devouring—it can hardly be said eating, because nothing passes his stomach; all is thrown up again.

THURSDAY.		THURSDAY—continued.	
	lbs. ozs.		lbs. ozs.
Water	6 4	Pudding	1 4
Milk	2 0	Veal	1 0
Rye	3 0	Meat pye	0 8
Sugar	0 4	Beer and water	6 8
Treacle	0 8	Milk	7 1
Bread	1 0	Bread	3 0
Milk	3 0	Milk	3 0
Butter	0 8	Water	3 0
Sugar	0 4	Bread	1 0
Beef	1 0	Milk	2 0
Bread	0 4	Beef	1 4
Milk	6 4	Small beer	4 0
Bread	0 8	Fruit	1 0
Water	6 4		
Milk	3 0		
Apple pye	1 0		
			69 8

TUESDAY.		lbs. ozs.		lbs. ozs.
Bread		5 0	Beef	1 0
Milk		8 0	Mutton	1 0
Butter		0 8	Beer	4 0
Water		2 0	Sugar	0 8
Milk		4 0	Fruit	1 0
Hasty Pudding		5 0		
Water		6 8	Tuesday	55 8
Treacle		0 8	Monday	60 12
Meat Pye		1 12	Sunday	77 0
Mutton		1 0	Saturday	58 8
Pudding		1 4	Friday	61 14
Water		6 8	Thursday	69 8
Beer		2 0	Salt, in the 6 days	1 0
Milk		2 0		
Water		2 0	Total	384 2

“A letter from T. Cookson, M.D., to Mr. Latouche, at Little Chelsea, concerning the boy who has an extraordinary boulimia or craving appetite. Communicated to the Royal Society by John Martyn, F.R.S., and Prof. Bot., Cantab.

[Read May 9, 1745.]

“Wakefield, April 24, 1745.

“SIR,—I was desired by your friend Mr. Arnet to transmit to you what I could collect relating to the boy at Barnsley (six miles from Wakefield); so please to accept of the following, which is the enclosed account of his eating and drinking, taken by a friend of mine, for six days successively.

“Matthew Daking, a healthful and sprightly boy, about ten years old, was, about fifteen months ago, seized with a fever, which continued above a fortnight. In the beginning he had frequent provocations to vomit, which induced his apothecary to give a gentle vomit of ipecacuanha. The retchings continuing, he gave him another. They seemed to operate well, but yet did not answer the end in settling his stomach. However, the fever gradually went off, but the vomiting rather increased, notwithstanding some other methods were used. He then began to have a craving appetite, to satisfy which he was indulged in eating and drinking more plentifully, but always vomited most of what he had taken almost immediately. His appetite kept increasing, so that in a few weeks his eating was come to the pitch you now see it in. Thus he continued above a year. His urine and stools do not exceed those in health; so that he vomits most of what he takes in. He has tried crude mercury and all sorts of medicines and mineral waters. At present he looks pretty well in the face, and is cheerful, but has lost the use of his legs and thighs, which are much emaciated. He is sometimes so hungry that he says he could eat them all. He often

wishes we were in the king's kitchen. One pig was fed with what he had vomited, and was sold in the market; but the country people getting hold of the story put a stop to the feeding of any more.

“To account for the disorder I am much at a loss, so shall not trouble you with my conjectures.

“I am, your most obedient servant,

“T. COOKSON.

“By the journal annexed it appears that he ate the following quantities of various sorts of food, both meat and drink, as is specified in the other journal, which I have given at large, pp. 367 and 398.

1745.		lbs.	ozs.
April 4.	The whole quantity amounted to	65	8
„ 5.	„ „	60	14
„ 6.	„ „	58	8
„ 7.	„ „	76	12
„ 8.	„ „	60	8
„ 9.	„ „	55	8
Total in Six Days		377	10
Salt		1	10
		<hr/>	
		379	4
		<hr/>	

“N.B.—He died a few months after, quite emaciated.”

Voracity is commonly occasioned by some abnormal condition, such e.g. as the presence of tape worm (*tenia*):—

“In a case under M. Rostan, in 1819, ice administered inwardly considerably abated for a time the fury of the patient's hunger (*Medical Gazette*, July 1833). Several pieces of *tænia* were expelled by means of purgatives. As her hunger decreased, her appetite became depraved, so that she would devour the raw lights of slaughtered animals, and browse upon grass.”*

In the *Philosophical Transactions*, Dr. Burroughs relates the case of a patient who would devour an ordinary leg of mutton at a meal for several days together, and fed greedily at the same time on sow-thistles and other coarse vegetables. Leaving, however, these somewhat unsavoury subjects, we may with advantage consider the physiological questions to which they give rise. Hunger and thirst are physiological states, and they have a definite relation.

This has been carefully considered by Dr. Good, among others, who thus describes it:†—

* *The Study of Medicine*, by John Mason Good, M.D., F.R.S., &c. Vol. i. p. 107, note by Ed.

† *Ibid.* 4th edition.

“THIRST AND HUNGER COMPARED.

“Thirst and hunger may be compared to two sisters, united together for the common purpose of rendering the animal attentive to the preservation of its own existence. When their call is obeyed, they are a source of pleasure; when it is neglected or resisted, they are a cause of great and even fatal suffering. But, in the production of these two very different results, pleasure and pain, thirst is far more energetic and intense than hunger. The quickness with which the taking of drink appeases the first of these sensations, contrasted with the slowness with which solid aliment is necessarily conveyed into the stomach, perhaps, may tend in some measure to explain the really greater enjoyment generally felt in quenching thirst than in satisfying hunger. . . . The differences between hunger and thirst, when long continued, and assuming the character of diseases, or rather between the effects of a total abstinence from solid food, are still more strongly marked. To use a term employed by Brown, the state of *sthenia*, of erethismus, of dryness, and of local and general heat; the increased activity in the general and capillary circulations; the energy of the external senses, of the whole nervous system, and of the muscular organs—the results of thirst—form a very manifest contrast to the prostration of every power of the constitution, to the languor of all the functions, and to the true adynamia produced by unappeased hunger. Death, which is the end of both these scenes, takes place much sooner from thirst, and the more so because no remission occurs in the cruel and progressive course of its symptoms. Death from want of solid food always comes on more tardily, and its phenomena, which are characterised by irregular paroxysms, are attended with remissions of greater or less duration. . . . Savages and savage beasts are equally sensible of the benefit of pressure in the case of hunger, and resort to it upon all occasions where they have an opportunity of taking off the pain in the usual way.

“The manis, or pangolin, that swallows its food whole, will swallow stones, coal, or any other substance, if it cannot obtain nutriment; not that its instinct deceives it, but for the purpose of acquiring such a pressure as may blunt the sense of hunger, which it finds intolerable. Almost all carnivorous beasts pursue the same method, and a mixed mass of pieces of coal, stone, slate, and earth, or other hard materials, is often met with in the stomach of ostriches, cassowaries, and even toads.

“The Kamtschadale obtains the same end by swallowing sawdust, and some of the northern Asiatic tribes by a board

placed on the region of the stomach, and laced behind with cords, drawnt tighter and tighter according to the urgency of the uneasiness. In our own country we often have recourse to a similar expedient, and only exchange the tightened stomach-board for a tightened handkerchief. It is possible, therefore, temporarily to overcome these natural sensations without the natural means; and the passions of the mind have as strong an influence on both as any of the substitutes just adverted to. Thus both are completely lost beneath the sudden communication of news that overwhelms us with grief or disappointment. So Van Helmont* tells us that, happening to dislocate his ankle while walking, with a good appetite to dine with a friend, his appetite immediately forsook him, but returned as soon as the joint was replaced, though the pain continued for some time with little alteration. There are some passions, however, as those of rage and eager desire, which, while they repel the sense of hunger, increase that of thirst. But they prove equally the close connection of both feelings with the state of the nervous system generally, and the strong and extensive influence which is sympathetically exercised over them.

“Morbid Thirst, as a genus, is new to the science of Nosology, and hence the two species, which belong to it, have hitherto, in almost every instance, been separated from each other, and thrown loosely into remote parts of the classification. Dr. Young, however, offers an exception to this remark; for, with his accustomed accuracy, he has united them under a common head. The genus being new, it has hence been necessary to create a new name for it, and that of *dipsosis* (from *δύψω*, ‘to thirst’) has appeared not only most pertinent, but most consonant with the nomenclature in common use, which has naturalised various terms derived from the same root—as *adipsia*, *polydipsia*—this last being a synonym of hydrophobia. The two species of the genus are the following: 1. *Dipsosis avers*; 2. *Dipsosis expers*. Immoderate Thirst and Thirstlessness . . .

“I have at this time,” says Dr. John Mason Good,† “a young lady of about thirteen years of age, in other respects in good health, who is tormented with a thirst so perpetual, that no kind or quantity of beverage seems to quench it for more than a few minutes. Emetics and purgatives have been tried in vain. Squills and other nauseating expectorants seem to promise more success. It has now lasted for several weeks.

* Helmont believed that the seat of the soul was in the stomach, for, he argued, from the moment we receive bad news, we lose our appetite. If we are famishing we have only bad dreams, because the stomach participates in the want which attends it. It could not, he maintained, possibly reside in the brain, because that organ does not contain blood.

† *The Study of Medicine*, vol. i. pp. 100, 101.

The most grateful palliatives are the vegetable acids, and especially acescent fruits, and a decoction of sorrel-leaves (*rumex acetosa*, Linn.), slightly inspissated with gum-arabic or some other mucilage, and sweetened to meet the palate. Liquorice, which, among the Greeks, had so high a reputation for quenching thirst as to be honoured with the name of *αδιψον*, 'the thirst extinguisher,' has little or no effect. And it is probably true, as suggested by Dr. Cullen, that it only acts in this manner when the root is well chewed, by which means the salivary excretories become stimulated to an increased secretion of fluid. In a foreign miscellany we have reported to us a case of the same kind, brought on by drinking a cold beverage during the paroxysm of a fever, that continued for more than a twelve-month.* And in another foreign journal we have an account of this disease as epidemic among children.† The quantity drunk is sometimes enormous. Four hundred pints of wine and water have, in some cases, been swallowed daily. . . . The agony of violent thirst brought on by bodily suffering is well depicted in the memorable Black Hole of Calcutta.‡

Cases of *thirstlessness* (*dipsosis expers*) are not by any means frequent. W. Bouffard records one instance, in which a young lady, 22 years of age, passed whole months without drink, yet appeared to be well in every other respect.§ Facts of the same kind are reported by Sir G. Banks; || and Sauvages mentions two instances that occurred to himself. In the one, the patient, a learned and excellent member of the Academy of Toulouse, never thirsted, and passed months at a time without drinking even in the hottest part of the summer; in the other, the patient, who was a female, of a warm and irascible temperament, abstained from drinking for forty days, not having the smallest degree of thirst through the whole of this period.¶ Neergaard, as quoted by Blumenbach (*Physiol. sec. xxi., 322*). T. W. Neergaard, *Vergleichende Anatomie und Physiologie der Verdauungswerkzeuge, &c.*), has furnished us with other examples; and M. Fournier informs us that one of his most intimate friends reached, not long since, the age of 48, without ever having drunk of any fluid, or been thirsty; but he was accustomed to eat voraciously. It is singular that he should have died of *dropsy* of the chest, apparently the result of a second bleeding for some accidental malady.—*Dict. des Sciences Médicales*, art. "Cas Rares."

* *Huermann, Bernerkungen*, i. p. 28. † *Gazette de Sante*, 1777, p. 93.

‡ *Annual Register*, 1758.

§ *Dict. des Sciences Méd.*, tom. li. p. 405. || *Med. Trans.*, vol. ii. p. 265, &c.

¶ *Nosol. Method*, vol. iv. p. 770, 4th edit.

This paper would hardly be complete without a reference to the exhibition provided by Dr. Tanner, an American physician, who, in the present year, entered on a fast of forty days' duration. The task was declared to have been accomplished, but to the impartial critic it was attended with a series of circumstances little calculated to favour a belief in its *bona fides*. The fasting doctor was subject to no scientific examination while undergoing the self-imposed test, which can be deemed satisfactory, and the secrecy exhibited in many of the details in connection with the affair served to awaken a doubt of the integrity of the chief actors in it. Moreover, late accounts reveal that it was entered on in a purely commercial spirit, the "doctor" having benefited pecuniarily to the extent of £25,000. Such elements detract from the scientific value of the experiment, and reduce it at once to the common level of a Barnum's show; so that for any advantage to be derived from it towards physiological research became an absolute impossibility. The "fast" is said to have been accomplished, the only material taken throughout having been water and mineral waters. The record kept indicated a series of variations in bodily weight, which, had they been trustworthy, would have served to interest the physician very considerably; the instant return of an excessive appetite, however, at the conclusion of the fast, and the wonderful tolerance shown by Dr. Tanner's stomach for large quantities of solid food, when, by all ordinary experience, it could scarcely be supposed capable of receiving the smallest amounts of even the lightest nutriment, lend perplexing appearances to the whole business. That a forty days' fast, or even a longer, is possible, can be readily supposed, but that Dr. Tanner has proved the fact is open to grave suspicion.

"The Fasting Doctor" has been followed by many imitators; one, an Italian student, who undertook to live fifteen days without food, recently succumbed at the end of eight; in other cases death has proved the impossibility of the task except to such as are physically constituted to resist privation for a lengthened period. The nervous temperament has been shown to have an important bearing on the subject, and, in all future experiments, this must be taken into first account. That there is much to be *learned* from the phenomena of starvation is undoubtedly true, but the method of inquiry that will yield tangible results is the simple, unsensational, and certain investigation characteristic of veritable research. Quackery and pretension are the enemies of science.