

SMITH'S  
FRUITS AND FARINACEA,

CONDENSED BY

F. W. NEWMAN, M.A.

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FRUITS AND FARINACEA

THE

PROPER FOOD OF MAN.

BY THE LATE JOHN SMITH, OF MALTON.

EDITED BY

EMERITUS PROFESSOR FRANCIS Wm. NEWMAN,

*FOR THE VEGETARIAN SOCIETY.*

MANCHESTER: JOHN HEYWOOD, 141 & 143, DEANSGATE.

LONDON: F. PITMAN, PATERNOSTER ROW.

1873.



MANCHESTER:  
JOHN HEYWOOD, EXCELSIOR PRINTING WORKS,  
HULME HALL ROAD.

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THE first edition of this work was published in 1845, and dedicated to Dr. William Lambe, an aged physician, and a veteran in vegetarian practice.

To adapt it to busy and unscientific readers much condensation has been used, which, in a few cases, required some transpositions. Especially the chemical arguments have been reduced to their simplest outlines. Readers who desire to see them more in full must be referred to the second edition of the work, which was printed without change by the Society.

The reader must not accept everything in this book as a manifesto from the Society. Mr. John Smith speaks for himself, and, in dealing with so vast a range of subjects, may easily have fallen into error in some facts or arguments without impairing the high value of his book as a whole.—EDITOR.





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AN ABRIDGMENT OF THE WORK

ENTITLED

“Fruits and Farinacea the Proper Food of Man,”

BY THE LATE JOHN SMITH, OF MALTON.

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In the PREFACE the author describes how he was first led to study the subject. Having read a paper to a literary society on the phenomena of sensation—after which a discussion took place on the resemblance of man to the superior animals in nerves and brain—the following question occurred to him :

“Is man justified in slaughtering animals for his food, seeing that they are exquisitely sensible of pleasure and pain ?”

The answer which he mentally returned was : That *if* the flesh of animals be necessary to our welfare, then we are justified, provided that no needless pain be given in the slaughter. But *if* health, strength, and happiness can be maintained, and equal longevity, without flesh meat, then neither wisdom nor benevolence can sanction the practice, especially with the cruelties that are daily perpetrated in it.

Extensive studies then gradually led him to the conviction that a flesh diet is not only not necessary, but is pernicious to man. In consequence he renounced it in his own practice, and testifies, in his preface, that he was rewarded by better health and more real enjoyment.

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In his INTRODUCTION he remarks how prevalent is the failure of man's Reason where his own welfare is concerned.

Reasoning at every step they tread,  
Men yet mistake their way ;  
While meaner things, by Instinct led,  
Are rarely known to stray.

Error once adopted into *national habits* is peculiarly difficult to counteract. He who will stem the flood of public opinion encounters obloquy and ridicule; yet the discoveries of one generation often become established truths with the next, however rudely rejected at first.

These remarks apply emphatically to national diet, which in all regions of the globe has been determined by *the circumstances* in which man has been placed, rather than by the exercise of his primitive and uncorrupted instincts, or the rational deduction of a sound understanding. The Author hopes to prove that fruits and roots, farinaceous and succulent vegetables, were our ORIGINAL food, our NATURAL food, are still our BEST food, and must ultimately be our UNIVERSAL food.

## PART I.

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# ORIGINAL FOOD OF MAN.

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### CHAPTER I.

EVIDENCE FROM THE WRITINGS OF MOSES AND OF TRADITION.

SACRED and profane authors unite in representing the progenitors of our race as *frugivorous*, *i.e.*, eaters of grains, seeds, kernels, pulse, roots, and fruit; in contrast to the *carnivorous* on one side, and the *herbivorous*, or grass-eaters, on the other.

In Genesis i., 29, God says to Adam: "Behold, I have given you every herb bearing seed, and every tree in the which is the fruit of a tree yielding seed: to you it shall be for meat (*i.e.*, food)." Here we find plainly and distinctly stated what God intended should be the food of mankind.

Again, Genesis ii., 15-17: "Out of the ground the Lord God made to grow every tree that is pleasant to the sight and good for food . . . and commanded the man, saying, Of every tree in the garden (save the tree of the knowledge of good and evil) thou mayest freely eat." No one, I think, can mistake the language here employed, or arrive at any other conclusion than that fruit and herbs bearing seed were expressly granted as the food of man; and we shall find that his organization was in perfect harmony with this divine command.

In the Greek and Latin authors we find frequent allusions to that period of innocence and happiness—"the golden age"—when man fed upon the delicious fruits of the earth, without even the need of cultivation. The poet Ovid diffusely describes the moral excellence of that state (Ovid's *Metam.* i., 113 of Dryden's Translation), and elsewhere adds his condemnation of slaughtering beasts (xv., 137):—

Not so the golden age, who fed on fruit,  
Nor durst with bloody meals their mouths pollute.  
Then birds in airy space might safely move,  
And timorous hares on heaths securely rove;  
Nor needed fish the guileful hooks to fear;  
For all was peaceful, and that peace sincere.

The golden age is described in heathen mythology as under the dominion of the ancient god, Saturn; when, according to



Dicæarchus (as related by St. Jerome in his books on Grecian antiquities), no man ate flesh, but all lived upon fruits and pulse. Virgil alludes to this era as universally believed in. Our own poets, Pope and Thomson, join their voices on the same side. In Pope's "Essay on Man," epistle iii., 147, we read :—

Nor think, in Nature's state they blindly trod :  
 The state of Nature was the reign of God.  
 Self-love and social at her birth began—  
 Union the bond of all things, and of man.  
 Pride then was not, nor arts, that pride to aid :  
 Man walk'd with beast, joint tenant of the shade.  
 The same his table, and the same his bed ;  
 No murder cloth'd him, and no murder fed.  
 In the same temple—the resounding wood—  
 All vocal beings hymn'd their equal God.  
 The shrine with gore unstain'd, with gold undrest,—  
 Unbrib'd, unbloody stood the blameless priest.  
 Heaven's attribute was universal care,  
 And man's prerogative to rule, but spare.  
 Ah ! how unlike the man of times to come,  
 Of half that live, the butcher and the tomb !  
 Who—foe to Nature—hears the general groan,  
 Murders their species, and betrays his own.  
 But just di-ease to luxury succeeds,  
 And every death its own avenger breeds.  
 The fury-passions from that blood began,  
 And turned on man a fiercer savage—man.

Similar to this is the language of Thomson, in reference to the same period. Speaking of herbs, he says :—

But who their virtues can declare ? Who pierce  
 With vision pure into their secret stores  
 Of health and life and joy ?—the food of man,  
 While yet he liv'd in innocence, and told  
 A length of golden years, unflesh'd in blood,  
 A stranger to the savage arts of life,  
 Death, rapine, carnage, surfeit, and disease—  
 The lord, and not the tyrant of the world.—(*Spring*, 233.)

This primeval state of innocence and bliss did not long continue. Man forsook the way of peace, and is no longer a fit inhabitant of Paradise. After his transgression, he could no longer enjoy abundance of delicious fruit, except as the result of industry, and even then he would frequently have to derive his subsistence from roots, corn, and other farinaceous or succulent vegetables.

A similar belief concerning the primitive food of man prevailed among the Phœnicians, the Egyptians, and the Chaldeans, as we have reason to believe from Sanchoniathon, from Manetho, and



from Berosus. The number of Greek writers who may be quoted on this side is remarkable. Ælion says that the most ancient Athenians lived on figs, the Argives on pears, and the Arcadians on acorns; and an oracle (according to Herodotus) alluded to the Arcadians in later times as "acorn-eaters." The celebrated Roman physician, Galen, avers that acorns afford as good nourishment as many sorts of grain, and that the Arcadians lived on them long after the rest of Greece used bread-corn. He also agrees with Pliny, the naturalist, in asserting that mankind in the first ages subsisted on acorns. Porphyry, a Platonic philosopher of the third century, a man of great talents and learning, says: "The ancient Greeks lived entirely on the fruits of the earth."

Hippocrates and Celsus (eminent physicians) confirm the statements concerning the primitive regimen of mankind; and, in fact, "all writers of antiquity, of every nation—historians, physicians, philosophers, and poets—assert that the first generations of men, who lived nearly a thousand years, were perfectly natural and simple in their diet."

When the Deluge had swept away the first race of men, permission of fleshmeat seems to have been granted. Indeed, man was both to replenish and to subdue the earth; but to subdue it in cold climates, which produce chiefly inferior herbage, before art and industry have reared fruits and cereal grasses, he would be under the necessity of becoming carnivorous at first. So Plutarch observes—"Those who first ate flesh probably ate it from scarcity and want of other food." But we must distinguish between divine permission and divine command. What may be convenient at one time may be highly improper at another. The Jewish law of divorce was conceded to the Jewish husband "for the hardness of men's hearts," although not in accordance with high and true morality. Retaliation also, and polygamy, were allowed; but the Mediator of a better covenant ordains otherwise for his followers. Things may be lawful that are not expedient; and man may be allowed the use of what might be to his advantage and happiness to reject.

Without disparagement of vegetable diet, we concede that animal food was *permitted* after the Deluge; nevertheless, long after that event, the patriarchs and their descendants rarely touched fleshmeat but on some festive occasion, and even to this day the Syrians and Mesopotamians, and natives of other countries, live after the same manner.

Asaad Yakoob Kayat, a native Syrian, in a speech at Exeter Hall, May 16th, 1838, stated that he had lately visited Mount Lebanon, where he found the people as large as giants, and very active. They lived almost entirely on dates, and drank only water, and many among them were 100 or 110 years old. Burckhardt says of the Bedouins: "The Arabs never indulge in

animal food and other *luxuries*, except on the occasion of some great festival, or on the arrival of a stranger. For a common guest bread and flour paste suffice; a greater man has coffee and rice milk; but, for a man of some rank, a kid or lamb is killed."

Mr. Newton, the author of the "Return to Nature," interprets the Greek fable of Prometheus (who first slaughtered the ox) to mean that the use of animal food drew after it an endless train of diseases.

Haller (the founder of modern physiology) expresses substantially the same views concerning the history of human food.

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## CHAPTER II.

### INFERENCES FROM THE ORIGINAL INNOCENCE OF MAN.

IF we believe that man was created in the divine image, we must believe that the thoughts of killing or of cruelty could find no place in him. At peace with the whole animal creation, his presence would excite neither the fears of the timid nor the resentment or ferocity of the strong. Let us picture to ourselves the primeval pair watching the sportive gambols of the lamb; and let us imagine, if we can, the first mother of our race thus addressing the partner of her joys: "Adam, I am becoming weary of these insipid fruits, that are so common; kill for me that little lamb; let me satiate my appetite with its flesh. Let not its painful struggles, nor its plaintive cries, disappoint the gratification of my desires." Or let us suppose her, if we can, thus addressing the dove that nestles in her bosom: "My peaceful bird, I admire your plumage and your faithful attachment, but appetite prompts me to deprive you of the life that seems to you so sweet, in order that I may feast on your little limbs." No; for, as Matthew Henry observes, "though we read of her coveting forbidden *fruit* for the wisdom and knowledge which she promised herself from it, yet we never read that she coveted forbidden *flesh*." Even in our degenerate state the man of cultivated moral feelings shrinks from the task of the butcher; how much more must man have shrunk from it while the state of innocence continued! But when blood had stained his hands, and guilt had hardened his heart, he ruled with a rod of iron instead of a sceptre of peace; so that the language of Deity concerning him became—"The fear of you and the dread of you shall be upon every beast and every fowl."

Some there are who doubt or deny that man was originally perfect, and believe that his condition has been progressive in mental and moral qualifications. With such the arguments hitherto advanced will have little weight, and for these I shall adduce other evidence.

## CHAPTER III.

## INFERENCES FROM SIGHT, SMELL, AND TASTE.

IN all matters connected with organic life, man is directed (as inferior animals) by instincts, through sensations yielding pleasure and causing desire, or through disagreeable sensations warning him of danger. This applies eminently to the selection of his natural food, since he needs instincts alike to direct him to it, and also to test its qualities. Sydney Smith well says, "that Nature does not leave us to Reason in respect to the necessaries of life," but places Animalism as our basis.

Can we, then, suppose that man was originally tempted by the *sight* of other animals to kill them for food? There is beauty in them, it is true; their symmetry and movements delight us; but this beauty does not excite our appetite. Again, suppose an animal killed by accident, or even by design, and its skin removed, would the sight, or the smell, excite desire of eating it? Would they not rather excite horror and aversion? In a warm climate, must not the dead flesh have speedily caused insuperable loathing? Mangled and gory limbs do not gratify sight, smell, nor yet taste. Man therefore cannot have been *originally* carnivorous.

What objects would naturally entice his appetite? The herbivorous animal is attracted by a grassy lawn; but not so man. His appetite is excited by trees "pleasant to the sight" (as Moses calls them): the organ of sight first directs him to fruit, and its fragrance presently allures him. Fruit, no doubt, was the primary and most congenial repast.

## CHAPTER IV.

## PREPARATION OF ANIMALS FOR FOOD.

How soon the use of fire in cookery was discovered, we cannot learn; but before it was introduced, it would be impossible for man to covet flesh meat. I believe no instance can be adduced\* of any nation feeding upon raw flesh, where fruits, farinaceous roots, and corn could be procured. Moreover, man has not *by nature* implements for slaying and cutting up animals. The carnivora have claws and powerful fangs to catch, tear, and devour; but for man there is no such provision. Hence his original diet, before art was advanced, cannot have been of flesh.

[\* Some may refer us to the horrid Abyssinian practice described by the author in his article 146, of cutting a steak out of a living ox, and eating it while warm with life. But this is only a depraved result of pampered appetite, evidently exceptional. — EDITOR.]



## PART II.

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# NATURAL FOOD OF MAN.

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### CHAPTER I.

#### EVIDENCE FROM COMPARATIVE ANATOMY.

THAT man is so constructed as to be *capable* of feeding on a great variety of substances, according as climate and circumstances may suggest, and yet enjoy a tolerable amount of health, happiness, and longevity, there can be no doubt. (The advantages of such a range of capability will be afterwards referred to.) Hence it is plausible to represent, that climate *ought* to determine our diet. In the torrid regions (say they), "where rich fruits grow naturally and abound, where rice or sago or maize or bread-fruits or cassava thrive, but sheep and oxen are inferior, vegetarian food is best for man; but in colder climates, nature evidently intends animal food to be a chief part of his diet." Of course a nation feeds on whatever presents itself with least trouble; use reconciles it to the most customary food, and, within certain limits, the alimentary organs accommodate themselves to the circumstances. But whatever their power of accommodation, this does not amount to a change of organization; nor can we deny that, if man was originally frugivorous, he is so now. Nay, I assert as matter of fact, that his present organization is that of a frugivorous animal, and, *therefore*, that to live on fruits and grain is strictly NATURAL to him.

Between the organs of digestion, of motion, and of sensation there is so fine a harmony, that even from one or two bones a skilful naturalist will often discern the dietetic habits of an extinct species. A piercing eye or keen scent, swiftness, strong talons or claws, sharp angular teeth or a crooked beak, a simple stomach, a short alimentary canal, generally mark the carnivora. The herbivora, for the most part, are in the reverse; and so consistent is nature, that we never find an animal with organs of a rapacious character combined with those of an opposite class, as, the claws of the tiger with the stomach or intestinal canal of the sheep.

Man almost everywhere has so overlaid by art his original instincts, that the problem of deciding his natural food, as Sylvester Graham wisely argues, is very like that of deciding on the natural food of an extinct species from the evidence of its anatomy. If our organs were wholly those of the carnivora, or wholly those of the herbivora, no one would doubt for a moment; but neither of the two can be truly asserted. We must consider various points in detail.

**TEETH.** The teeth of the Mammalia are—1. Incisors or cutting teeth. 2. Canine, cuspid (*i.e.* pointed) or eye-teeth. 3. Bicuspids (*i.e.* two-pointed) or small cheek teeth. 4. Molars (*i.e.* grinders) or large cheek teeth. In each jaw we have 16, viz., four cutting, two pointed, four double-pointed, and six grinders. These, in a perfectly normal state, form an uninterrupted series, all nearly equal in length and closely approximated in each jaw.

1. The Incisors in man are large, broad and compressed, with a flat edge. In carnivorous animals there are six in each jaw, small and pointed, standing further apart, and comparatively unimportant. In the herbivora they are broad, as in man; but generally much stronger, with the cutting ends considerably thicker, but varying extremely both in form and number. In the ruminantia (who chew the cud) there are no cutting teeth in the upper jaw, and those of the lower are flat, broad, and oblique, so as to oppose their upper surface to the callous gum above. In the horse they are large and strong. In the hog also they are strong, those of the lower jaw projecting obliquely. The elephant has no incisors in the lower jaw, and the two in the upper assume the form of huge cylindrical tusks. The rodentia (or nibblers), such as the rat, beaver, &c., have long curved incisors.

2. The Pointed, or canine teeth, assume their normal development in the carnivora; and to these there is no resemblance in the teeth of man, though his possession of what are called canine, *i.e.*, dog-teeth, is the principal evidence urged by those who contend that man is partly carnivorous. Throughout nature there are no sudden departures from the general type. Any organ which is characteristic in one class or order disappears by successive gradations through several other orders, till it finally vanishes, or becomes merely rudimental, as the fifth toe of the dog, and the nipple on the male human breast. Such is the case with the canine teeth. In the carnivora they are powerful weapons of offence. In some of the herbivora, as the horse, camel, and stag, they are still pointed and large. In man they are small and short, and no space is left between the opposite teeth for receiving the canines. If anyone will insist that they denote in men a flesh-eating propensity, he must in consistency hold the same yet more vehemently concerning the horse and the camel; so too concerning the baboon and other large apes.

3. The Bicuspids, or false molars, are wanting in the rodentia,

the ruminants, the horse, and the elephant. But in the carnivora they rise into high and sharp points, like the teeth of a saw, much larger and more prominent than in man, and with nothing that can adapt them to grinding food; but, like the canine teeth, they are fitted for tearing and cutting.

4. The Grinders of herbivorous animals are strongly contrasted to the cheek teeth of the carnivorous. With the former they are made for mashing and grinding, having square crowns, kept rough by their formation of bone and enamel alternately, since the bone wears away faster than the enamel. But the cheek teeth of the carnivora, above and below, shut into one another, and act as the teeth of a saw or a pair of shears, so as to cut and hold fast. To these our molar teeth are quite unlike, but greatly resemble the cheek teeth of both herbivorous and frugivorous animals.

ARTICULATION OF THE LOWER JAW.—The jaws of carnivorous animals, when closed, are tightly locked together by the teeth fitting into one another above and below, and also by the shape of the bones, which admit of no movement of the jaw but upward and downward. On the contrary, for grinding vegetable food the herbivorous jaw has a considerable power of sideway motion, for which the joint and socket are adapted. In man also, the lower jaw has much freedom of lateral movement, which aids in grinding the food between the molars. The quadrumana (or four-handed—*i.e.*, apes and monkeys) have a similar articulation of the jaw. Thus, again, we find the human anatomy to resemble that of the herbivora and frugivora, but to be contrasted to that of the carnivora.

ZYGOMATIC ARCH—TEMPORAL AND MĀSÉTÉR MUSCLES.—Flesh-eating animals, needing to seize, hold, and even carry their prey in the mouth, must have huge muscles to their jaws, and large cheekbones as a base of the muscles. The power of the cheek muscle (called the *māsétér*, or “chewer”) is generally proportioned to the span and spring of the arch of the cheekbone. In the carnivora this arch is of great size and strength, extending both backward and upward, and the champing muscle is so large as to swell out the cheek immensely. In ruminants the arch is short, and the muscles of the temple small. They have the muscles for the side-movement of the jaw largely developed, which are extremely small in the carnivora. In man also the arch is small, the muscles of the temple moderate, and the force of the jaws comparatively weak.

SALIVARY GLANDS.—These glands do not exist in fishes, and are feebly developed in amphibious mammalia. They are small in the carnivora, whose food needs little chewing and little saliva added to it. Saliva (water in the mouth), and the glands which produce it, are most needed where there is most mastication, as especially where the cud is to be chewed. In all the herbivora



the glands are large, indeed larger than in man, with whom they are larger than in the carnivora. It is stated that those of our race who have long subsisted on vegetable food have, in consequence, the salivary glands much more developed. In any case the secretion from these glands in man is very copious, which indicates his much nearer alliance to herbivorous than to carnivorous animals.

**ALIMENTARY CANAL.**—The length of this canal, as compared to the length of the backbone, is one very important fact, contrasting the carnivora and the herbivora; for the longer it is, the greater in general is the bulk of the food on which the animal subsists. In the carnivora the length of the canal may be only 3 or 5 times that of the backbone, or, in some few cases, 8 times. Herbivorous animals also vary much among themselves as to this ratio. In the hog it is 13 to 1; in apes it is 6 or 8 to 1; in the order which includes the horse and ass it varies from 6 to 11. Those who wished to lower the ratio in the case of man, in order to make out that he was naturally carnivorous, instead of measuring his backbone, as in the case of the animals with which they were comparing him, measured his height from the nape of the neck to the heels, thus improperly including the whole length of leg and thigh, by which process they made the ratio 6 or 7 to 1. Their results denote that 10 or 12 to 1 is nearer to truth. Here again we find him nearer by far to the herbivora than to the carnivora. But in the ruminants the ratio is said sometimes to reach even 28 to 1; and in the hyena, who largely eats bones, which need much digestion, the alimentary canal is about 8 times as long as the backbone. The porpoise and dolphin, which feed on fish, have a canal extremely long, but very simple in its structure.

**STOMACH.**—The stomach of carnivora generally consists of a simple globular *sac*, without internal division: that of the herbivora has two or more compartments: in the ruminants it is very large and complicated; so that four stomachs are counted. The stomach of the horse is comparatively simple, but the other digestive organs, called the cæcum and the colon, compensate by their greater size. The human stomach is simple, but has two portions called cardiac and pyloric; thus occupying a middle line between the herbivorous and carnivorous mammalia.

**COLON AND CÆCUM.**—The colon, which is the first of the large intestines, differs little in the carnivora from the smaller ones, and is never cellulated. In the herbivora, and in man, its dimensions are much greater, and deep cells are formed in it. The cæcum, or "blind pouch," is a prolongation of the colon. In the carnivora it is either altogether absent, or extremely small. In herbivorous and frugivorous animals it is a supplement to the stomach, being most voluminous and complex when the stomach is simplest. Those of the nibblers which feed on grain

have it large ; those which are omnivorous (as the black rat) have it small ; while in those which feed on succulent vegetables (as the hare) it is exceedingly large, having ten times the dimensions of the stomach.

In man the cæcum is tolerably large and globular, with a "vermiform" elongation, found also in certain large apes, and in the wombat. The cæcum is in larger proportion with infants than in adults. Moreover, the human colon is cellulated, as in the herbivora.

In answer to the general statement that the cæcum is larger in the herbivora than in the carnivora, Dr. Tyson states that the hedgehog, which he supposes to be frugivorous, has neither colon nor cæcum. But it is well ascertained that this animal naturally feeds on serpents and on insects. Dr. Tyson also alleges that the opossum, being carnivorous, has both a colon and a cæcum. To this, however, it may be replied that the opossum lives chiefly on roots and wild fruits, though it also devours poultry.

LIVER.—The carnivora and rodentia have a very complex liver, consisting of five parts, but in the whole animal series the liver is greater where the lungs are smaller. The liver is less developed in man than in many other mammalia, but more in Europeans and other flesh-eaters than in the inhabitants of warm climates.

PERSPIRATORY GLANDS.—The herbivora and man have an immense number of perspiratory glands in the skin, by which superfluous heat escapes. The carnivora, eating lean meat, which supplies no abundance of animal heat, are deficient in these glands. It is well known that the dog perspires chiefly from the tongue.

On a general review we find man to resemble the herbivora, in the absence of claws and tusks ; in the shape of the teeth ; in the joint of the lower jaw ; in the form of the cheek-arch, and moderate force of the muscles which chew ; in the considerable length of the alimentary canal ; in the size and complexity of the other digestive organs, and in the number of the perspiratory glands. In the enamel of the molar teeth being confined to the outside, man agrees with the carnivora. His stomach also is less complex than in most of the herbivora. Yet the horse has a simple stomach and rather short canal, as said above.

But here is a point of some importance. Dr. Combe has observed on a prevalent error, that flesh needs less digestion and *therefore* flesh-eaters have simpler and shorter digestive organs. But the intestines of grain-eating birds scarcely exceed in length those of rapacious birds. Grain and flesh alike contain much nourishment in small bulk ; *that is why* the creatures which live on these do not need capacious digestive organs. But when the food contains little nourishment in great bulk, the organs must be large and have a large surface to supply digestive juices.

## CHAPTER II.

## MAN (STRICTLY SPEAKING) NOT OMNIVOROUS.

FROM the facts of contrast and resemblance above recounted, some infer that man is omnivorous; that is, eats with equal propriety the food of the carnivora and the food of the herbivora; but I infer that, his structure being intermediate, his natural food also is intermediate.

If the carnivora have received the very best structure for the assimilation of flesh-food, and the herbivora the very best for grassy and vegetable food, then man who differs from them both cannot have the best adaptation for either sort indifferently, even though he be capable of digesting both tolerably.

Physiologists inform us that the gastric juice varies with the habitual food, adapting itself to flesh or vegetables; and it is believed that men who live largely on animal food lose power of digesting vegetarian food. If so, it will explain the frequent complaint that vegetables and fruit "disagree" with the stomach, so that some persons limit their vegetarian food to stale bread, biscuit, or rice. If it be true that the gastric juice thus changes, then a mixed diet must produce a mixed juice; and it seems a physical impossibility that this should act as well on each sort of food as the juice which is specifically adapted to the food.

We know that man *can* live on flesh alone, and *can* live on fruit and grain alone. If this is to be omnivorous, then, without controversy, he is omnivorous: but it cannot be justly inferred from these facts, that indiscriminate eating is his natural state. That must be judged of by considering the *special* aptitude of his structure, and by inquiring whether some definite food exists better suited to his entire nature than either that of the carnivora or that of the herbivora.

It is questionable whether any animal is omnivorous, if that word means formed for feeding on all sorts of food without preference, and able to attain by every sort indiscriminately the full perfection of its nature. The hog, the bear, and the opossum most nearly approach this character; but these, in a state of nature, invariably prefer fruits, roots, grain, and other vegetable produce.

If we even admit the hog to be omnivorous, the same cannot hence be inferred of man. For the hog resembles the carnivora in the cuspid and bicuspid teeth and the incisors, as to which man widely differs; and, wherever the hog resembles the herbivora, so also does man. Now, since we see that even the hog naturally prefers fruits, roots, and other vegetables when he can get them, and requires no animal food, how much more ought we to conclude this to be the natural state of man. Add to this the erect



posture of man, with hands adapted to pick fruit, but with no facility for catching prey or picking up low herbage—also, that his teeth are eminently suited to fruit—and it will not appear that he is formed alike for all sorts of food, but that he is specially adapted for aliments of a class *intermediate* to the two extremes—flesh and grass.

The nearest approach to man is the QUADRUMANA (four-handed creatures), particularly in the orang-outang, whose teeth (says Professor Lawrence) might easily be mistaken for human, though in the aspect of the canine teeth he approaches the carnivora, for they are longer and sharper, and have intervals to enable opposite teeth to lap over and knit. But, in most respects, the orang is extremely like us, as, in particular, in the disposition of the enamel on the grinders, the form of the stomach, the comparative length of the intestines, the capacity of the cæcum and cells in the colon. Where there is a difference, it is such as denotes man to be less formed for animal diet than the orang. Thus, the orang has the zygomatic arch larger than ours, and temple-muscles far stronger; but he is without the valvular folds of stomach and duodenum: also in general the other apes have teeth of a somewhat more carnivorous character. Now as the orang, and most species of monkeys, when left to follow their own instincts, are wholly frugivorous, subsisting on fruits, nuts, or farinaceous vegetables, we are justified in concluding that this is also *man's* natural food, and not that mixture of flesh and herbage which many physiologists would have us believe.

Dr. Abel's orang "appears naturally to have preferred fruit; though he yielded (on shipboard) to the temptation of meat, and seems to have quickly become as carnivorous as his companions. His food in Java was chiefly fruit, especially mangostans, of which he was excessively fond; he also sucked eggs with voracity, and often employed himself in seeking them. On shipboard he was very fond of bread, and would not refuse flesh; but always preferred fruits when he could obtain them. Afterwards, however, his food was vegetable, both from his own choice, and because it agreed much the best with him."\* Sir William Jardine says—"The food of this family may be called almost entirely vegetable, the eggs, and occasionally the young of birds, being the only approach which can be traced to a carnivorous propensity."† They plunder the maize-fields, and rob the orchards of their choicest fruits; and, in a state of confinement, vegetable diet continues their favourite and most nourishing support; but they will eat almost anything that the luxury of man has introduced, and some even become remarkable for their peculiarities. One of the keepers of the Tower of London

\* Jardine's Naturalist's Library. Mammalia, Vol. I., p. 76.

† Ibid, p. 31.

informed Mr. Newton "that experience has taught those who have the care of the menagerie that feeding monkeys on flesh renders them gross, and shortens their lives; from which practice they have therefore desisted."

Of the hoolocks (another species of orang, and native of the Garrow Hills, in British India) it is said: "Their food, in the wild state, consists (for the most part) of fruits common only to the jungle in this district of country; and they are particularly fond of the seeds and fruits of that sacred tree of India called the peopul-tree." Of one of these it is also stated that, "like many of the religious castes of this country, he seemed to entertain an antipathy to an indiscriminate use of animal food, and would not eat of either the flesh of the cow or hog; would sometimes taste a little piece of beef, but never eat of it." He would take fried fish, which he seemed to relish better than almost any other description of animal food, with the exception of chicken; and even this he would eat but very sparingly of, preferring his common diet, bread and milk, with sugar, fruit, &c.\* Of some species of South American simiæ it is incidentally mentioned by Humboldt that they live on fruits; and, indeed, all travellers and naturalists agree in representing the quadrumana as naturally frugivorous. All evidence derivable from Comparative Anatomy, therefore, is as demonstrative as we can expect such evidence to be, that the natural dietetic character of man is also frugivorous.

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#### OPINIONS OF LINNÆUS, CUVIER, AND OTHERS.

This part of the subject might now be safely left to the unbiassed judgment of all who would seriously reflect upon the evidence produced; but, lest the facts I have advanced should appear to some not sufficiently supported, and (consequently) the inferences I have deduced from them fall to the ground, I shall here add the testimony of men whose scientific acquirements and mental qualifications are universally acknowledged. Not that truth of an abstract and demonstrative nature is rendered any more a truth by the weight of any human authority, or by the sanction of a great name; but because some may be inclined to pay more attention to a much-neglected inquiry when they know that men of great talents have not despised it, and have arrived at a conclusion at variance with the opinion of the generality of mankind. "Such are the scientific attainments, and the general knowledge and integrity of some men," observes Sylvester Graham, "that their opinion on subjects to which they have given great attention is worthy of high consideration; and when such men are compelled, by the force of irresistible evidence, to come to

\* Sir W. Jardine's Natural History of Monkeys, p. 98—100.

conclusions and acknowledge principles which do not accord with their preferences, nor correspond with their practices, the testimony merits a still higher respect."\*

Linnæus, one of the most celebrated naturalists that ever existed, speaking of fruit, says: "This species of food is that which is most suitable to man, which is evinced by the series of quadrupeds; analogy; wild men; apes; the structure of the mouth, of the stomach, and the hands."†

M. Daubenton, the associate of Buffon, and the first writer who rendered the study of Anatomy subservient to Natural History, observes:—"It is, then, highly probable that man in a state of pure nature, living in a confined society, and in a genial climate, where the earth required but little culture to produce its fruits, did subsist upon these, without seeking to prey on animals."‡

Gassendi, in his celebrated letter to Van Helmont, says: "I was therefore contending that we do not appear to be adapted by nature to the use of flesh diet, from the conformation of the teeth; since all animals that live on land, and whom nature has formed to feed on flesh, have teeth long, conical, sharp, uneven, and with intervals between them; of which kind are lions, tigers, wolves, dogs, cats, &c. But those which are created to subsist only on herbs and fruits have their teeth short, broad, blunt, adjoining to one another, and distributed in even rows; of which sort are horses, horned cattle, sheep, goats, deer, and some others. And further, that men have received from nature teeth which are unlike those of the first class, and resemble those of the second. It is therefore probable, since men are land animals, that nature intended them to follow, in the selection of their food, not the carnivorous tribes, but those races of animals which are contented with the simple productions of the earth. Wherefore I repeat that, from the primeval and spotless institution of our nature, the teeth were destined to the mastication, not of flesh, but of fruits." "As to what relates to flesh, it is indeed true that man may be sustained on meat; but how many things does man do which are contrary to his nature! Such is the perversion of manners now, by a general contagion, ingrained into him, that he seems to have become a new creature. Hence the doctrines of morality and philosophy are directed to no other object than to recall mankind to the paths of nature, which they have abandoned."§

Sir Everard Home says: "While mankind remained in a state of innocence, there is every ground to believe that their only food was the produce of the vegetable kingdom."

\* Lectures on the Science of Human Life. Vol. II., p. 71.

† Linnæi Amœnitates Academicæ. Vol. X., p. 8.

‡ Daubenton's Observations on Indigestion. Translated by Dr. A. P. Buchan.

§ Gassendi's Works. Vol. X., p. 20.



Baron Cuvier, whose knowledge of Comparative Anatomy was most profound, whose authority therefore is entitled to the greatest respect, thus writes: "Fruits, roots, and the succulent parts of vegetables, appear to be the natural food of man. His hands afford him a facility in gathering them, and his short and comparatively weak jaws, his short canine teeth not passing beyond the common line of the others, and the tuberculous teeth, would not permit him either to feed on herbage or devour flesh, unless those aliments were previously prepared by the culinary processes."

"The use of plants," says Ray, the celebrated botanist, "is all our life long of that universal importance and concern, that we can neither live nor subsist with any decency and convenience, or be said to live indeed at all, without them. Whatsoever food is necessary to sustain us, whatsoever contributes to delight and refresh us, is supplied and brought forth out of that plentiful and abundant store. And, ah! how much more innocent, sweet, and healthful is a table covered with these, than with all the reeking flesh of slaughtered and butchered animals. Certainly man by nature was never made to be a carnivorous animal, nor is he armed at all for prey or rapine, with jagged and pointed teeth, and crooked claws sharpened to rend and tear; but with gentle hands to gather fruit and vegetables, and with teeth to chew and eat them."\*

Professor Lawrence observes: "The teeth of man have not the slightest resemblance to those of the carnivorous animals, except that their enamel is confined to the external surface. He possesses, indeed, teeth called 'canine;' but they do not exceed the level of the others, and are obviously unsuited to the purposes which the corresponding teeth execute in carnivorous animals." After sundry observations on organization, he says: "Thus we find that, whether we consider the teeth and jaws, or the immediate instruments of digestion, the human structure closely resembles that of the simiæ; all of which, in their natural state, are completely herbivorous." † (frugivorous?)

Lord Monboddo says: "Though I think that man has, from nature, the capacity of living either by prey or upon the fruits of the earth, it appears to me that, by nature, and in his original state, he is a frugivorous animal; and that he only becomes an animal of prey by acquired habit."

"The quadrumana, or monkey tribes," observes Roget, "approach nearest to the human structure in the conformation of their teeth, which appear formed for a mixed kind of food, but are especially adapted to the consumption of the more esculent fruits."

Mr. Thomas Bell, in his "Anatomy, Physiology, and Diseases

\* Evelyn's *Acetaria*, p. 170.

† Lectures on Physiology, &c., pp. 188, 189, 191.

of the Teeth," observes: "The opinion which I venture to give has not been hastily formed, nor without what appeared to me sufficient grounds. It is, I think, not going too far to say that every fact connected with the human organization goes to prove that man was originally formed a frugivorous animal, and, therefore, tropical, or nearly so, with regard to his geographical position. This opinion is principally derived from the formation of his teeth and digestive organs, as well as from the character of his skin, and the general structure of his limbs." The opinions of various other celebrated writers might be quoted; but they are reserved for another part of this work.

Seeing, then, that Comparative Anatomy is so clear in its indications of the proper food of man, and that men so well qualified for giving an opinion upon the matter have expressed themselves so decidedly, it certainly is surprizing to find so many authors on physiology and dietetics ridiculing the idea of a vegetable diet; and briefly stating, without an attempt at proof, that the teeth, stomach, and other parts of man's structure, declare him to be omnivorous, or formed for a mixed diet. The misconception (for such I must consider it) seems to have arisen from confounding a fruit and farinaceous (commonly called vegetable) diet with a herbivorous one, even Professor Lawrence having misapplied the latter term. It would be absurd to contend that man was formed for deriving his subsistence from the latter kind of food, though the more esculent vegetables may occasionally be enjoyed with impunity or positive benefit; but it does not appear to me possible to derive, from Comparative Anatomy, a single argument calculated to negative the conclusion that the human organization is specially adapted to fruit, roots, grain, and other farinaceous vegetables.

OBJECTIONS ANSWERED.—1. It has been objected, that, as the orang under man's training learns to enjoy animal flesh, so, whatever was or was not man's *original* and *natural* food, experience teaches us that he can *now* live on animal food with impunity.

With apparent impunity, I allow. This denotes that the alimentary organs have a certain range of *adaptability* to a treatment not strictly natural. Just so, a lamb doing a long sea voyage was induced to eat flesh meat, and afterwards refused grass. Horses, on the coast of Arabia (Hadramaut?), through deficiency of herbage, are said to be fed on fish; so are cattle in Norway, and on the coasts of Coromandel. (Life of Reginald Heber.)

Even a young wood pigeon, which is principally granivorous, has been trained to prefer flesh to grain. On the other hand, notoriously the dog and cat, naturally carnivorous, can be brought to live principally or wholly on a vegetable diet. Young kittens so fed, do not appear to suffer in health, and, when fully grown,

refuse flesh. The animal thus dieted changes its own nature, for better or worse, within certain moderate limits.

So too man, within certain limits, from his destiny of moving over the earth and subduing it, succeeds in (as it were) stretching the bands of his own nature, which was originally no more *adapted* to flesh eating than to grass eating. But it must not be assumed that this has been done with impunity—that is, that under his less natural diet he has that full share of robustness which his more natural diet would confer. We must distinguish between *adaptation* and *adaptability*. We are no more justified in pronouncing animals whose structure is frugivorous (as the orang-outang and man) to be omnivorous, because their nature has an elasticity, than to declare the lion and cat, the horse, cow, and sheep to be omnivorous from the same cause.

2. So far Professor Lawrence and other physiologists nearly agree with my argument, conceding that a vegetable diet is most natural to man, that he can be perfectly nourished on it, and enjoy *as much* health and vigour as on a mixed diet. But they OBJECT that fire and cookery so modify flesh meat as to make it even more appropriate to man's wants than his original and natural food.

I cannot admit Art to be better than Nature. With respect to food, the use of Art is, not to supplant pure animal instinct, but to assist it—to bring our natural diet to its highest perfection; to supply either nutriment to our food when growing, or, in uncongenial climates, heat or moisture; also to create an abundance of the natural supply by sowing, and planting, and protecting; finally, to preserve in all seasons of the year the stores which are laid up. Our intellect has to discover the intimate relations of animate to inanimate nature, not to change or confound them; to investigate physiology, not to subvert it, or to render man independent of it. "Reason and Instinct" (observes Dr. Lambe) "are but different modes of attaining the same end; nor can the former be more wisely employed than in rendering our habits conformable to the dictates of the latter."

If flesh be *not* by nature the true specific food of man, then no artificial preparation of it can make it really a true equivalent for his natural food. We are not inquiring, "What substances can man's art make digestible and nutritious for man?" for we have seen that all animals have a considerable range of adaptability; but, "What substances are intrinsically fittest for the nutrition of man, and for effectually promoting *all* his vital interests?" Ostensibly, that food to which his organisation specifically corresponds must be *the best*. The opinion that Art makes an alien food *still better* for him, is asserted without proof.\*

[\* May we not add, that, however vast the development of man's *mind* by civilized Art, no one has yet doubted that the tendency of such Art is to lessen the robustness of the body? As the savage has ruder nerves and stronger vitality, so the food natural to primitive man must be favourable to vital force.—Ed.]



## CHAPTER III.

## PHYSIOLOGY OF SIGHT, SMELL, AND TASTE.

FROM Comparative Anatomy we pass to Physiology. Instinct is in harmony with itself. The beast which eats flesh delights in the sight and smell, as well as in the taste of a mangled victim. While his prey is alive, the very sight or smell of it attracts him ; but the sight of herbage, roots, and fruits, gives him no pleasure, and excites no action. On the contrary, the herbivorous animal is attracted by the verdant mead, and there selects unerringly the plants best suited to it. Here again sight, smell, and taste are gratified in harmony. The same remarks apply to those animals whose instincts lead them to feed on decaying animal or vegetable matter. Objects to us most revolting gratify all their senses at once. When by sight, smell, and taste an object allures man to eat, we may believe such object to be his natural and reasonable food.

SIGHT.—Of all the things in the form of food, fine fruit most attracts the eye of man, and by the very sight makes his mouth water. Nothing is so strong a temptation to the young. Other objects, when artificially prepared and associated with previous enjoyment, will (I am aware) excite similar feelings ; but no article of food so much as fruit entices a taste which has not been vitiated by acquired habits.

SMELL.—The smell also of fruit peculiarly allures man, and our power of discriminating fruits by smell is considerable. Man (says Dr. Roget) “distinguishes vegetable odours more accurately than those proceeding from animal substances. The reverse is observed with regard to quadrupeds whose habits are decidedly carnivorous.”

Certain hunting beasts, as eminently the dog and jackal, perceive an odour even when prodigiously diluted by distance or by evaporation : this is called *power* of scent. Yet animals which need to smell, like the sheep, solely at substances near at hand, are believed to have more *discrimination* in their smell. This again associates man with the vegetable feeders. “Man” (says Müller, “Elements of Physiology,” ii., p. 1317), “is far inferior to carnivorous animals in acuteness of smell ; but his sphere of susceptibility to odours is more uniform and extended.” Smell not only warns the lungs of noxious emanations, but guides animals to their natural diet. Undoubtedly our artificial state has impaired in us this instinct. We cannot, like the sheep or ox, distinguish *this* herbage from *that* by smell ; and, in fact, such food is not adapted to us. But if from birth to manhood we had fed naturally, there is every reason to believe that our faculty of smell would discriminate right and wrong in food.

TASTE.—The organs of taste and scent are in strict harmony. When human nature is unvitiated, what is unwholesome is painful and nauseous; but by the repeated use of injurious and improper articles, the integrity of nature is destroyed, the faculty of taste loses its efficiency; pernicious substances may become agreeable; and thus the foundation of disease is laid. While it must be conceded that we have no longer from sight or smell any previous guidance to nuts, grain, roots, and vegetables, as wholesome food, yet taste in one respect furnishes us with a fair test of what is natural to man and truly beneficial as food. That of which we never tire must be natural; that which by repetition disgusts us, though the flavour be high and at first agreeable, is condemned by our instinct, even when custom has vitiated it. It is notorious that bread, potatoes, rice, and pure water are excellent as daily food; but those who feed on artificially prepared flesh require continual change.

Any perverted organ may undergo change of function, and transmit perversion to successive generations: yet the children of flesh-eating parents show preference for fruit, farinaceous substances, and sweets, for which they would gladly forego the most savory dishes of flesh. Boys so uniformly covet fruit, that a theft of fruit by them is apt to pass as a venial offence. And despite of our customary flesh diet, one who has long abstained from it experiences a much purer and more exquisite enjoyment in his own more wholesome food, and wonders at the degraded taste of others. "I am astonished to think" (says Plutarch) "what appetite first induced man to taste of a dead carcase."

OBJECTION.—It is said that the general adoption of a mixed diet by mankind proves man to be *instinctively* led to it. I reply, many other practices, undeniably noxious, have become about as general as flesh diet.

Tobacco (Sylvester Graham observes) is used as extensively as flesh meat; and its devotees would rather relinquish the meat than the tobacco; yet no one will contend that the appetite for tobacco is *instinctive*. We know that man naturally loathes it, and with difficulty overcomes his antipathy; yet if everyone were trained to use it so early that he could not remember its first effects, we might easily believe that man has a natural instinctive desire and necessity for it. In the East, where everybody smokes, and nursing mothers take the pipe from their own mouths and put it to the mouths of their sucking infants, the children grow up in fondness for the pipe. This (according to the logic of those who pronounce man naturally omnivorous) ought to prove that it is natural to us to smoke, chew, and snuff tobacco.

The intellect and arts of man enable him to deprave his instincts as other animals cannot. Civilization and luxury have perverted his taste. Sir John Ross found the Esquimaux to

abhor plum-pudding; so accustomed were their stomachs to whale-blubber and train-oil. So far from envying the refined tables of the south, only the impulse of starvation would have induced them to partake of our food. Such is the power of habit. Bremner, in his "Excursions into Russia," moralizes on the devotion of the Russians to the soup called *Batinia*, which they regard as the greatest delicacy on earth; while he entitles it an atrocious compound, and knows not how otherwise to express his disgust but by comparing it to witches' broth. We learn from him that it combined spoonfuls of mustard and ice, rotten sturgeon, and bitter cucumber. "The mouthful of ice" (says he) "was the worst we ever swallowed, and we resolved to make no new experiments on Russian dishes."

Sylvester Graham well reasons that national customs of diet have always been determined either by necessity or by a view to present enjoyment. Mankind have tried how far they can go in unnatural food, dwelling, or other habits, without sensible immediate mischief. But in many cases their error in food is partially compensated by circumstances favourable to health in climate and out-door life. The stronger they have been from salutary climate and general habits, the greater liberty they have taken in dietetic excesses; then a sort of balance arises, and, on a superficial view, no result seems to follow as to health, vigour, and longevity, let nations live as they may. But their *actual* life shows only what is *possible* to human nature, not what is best, most natural, most desirable, most reasonable. This actual life does not invalidate the evidence of comparative anatomy that man is, naturally and purely, a frugivorous animal.

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## CHAPTER IV.

### SENSITIVE AND MORAL FEELINGS OF MAN.

I CANNOT agree with Shakespere, when he says—

The poor beetle that we tread upon,  
In corporal sufferance finds a pang as great  
As when a giant dies.

For we know that lower animals, whose nervous system is less developed than ours, are less sensitive to pain, and often suffer little inconvenience from the loss of one or two limbs. We must beware of morbid sensibility, yet, avoiding all exaggeration, none can deny that those animals which chiefly furnish human food have a nervous system similarly developed to our own, and are acutely sensible both of pleasure and pain.



Few of those who feed upon flesh are aware of the enormous amount of excruciating pain that is inflicted to satisfy their appetite. The slaughter-house is seldom visited by persons whom its struggles and shrieks will deeply pierce. Young people early trained to slaughter gradually lose all sympathy with the beasts, and have their feelings blunted. Were every one forced to kill for himself all the animals whose limbs he devours, his sympathies would be a check on his desire for flesh. "The feelings of the heart," says Nicholson, "point more unerringly than the dogmas and subtleties of men, who sacrifice to custom the dearest sentiments of humanity." In all God's works there is harmony of design. It is not for nothing that he has implanted in us such an aversion to taking life, such a horror of shedding blood, and such a heart-sickness on witnessing it. If we shrink from the task of butchery and shun the scene of slaughter, can it be right to impose it on others, not for any necessity to us, but purely to gratify, to pamper our appetite?

The opinions of others on this subject may not be unacceptable to the reader—

"Nothing can be more shocking and horrid," says Pope, "than one of our kitchens sprinkled with blood, and abounding with the cries of creatures expiring, or with the limbs of dead animals scattered or hung up here and there. It gives one the image of a giant's den in romance, bestrewed with scattered heads and mangled limbs."

Diogenes observed that "we might as well eat the flesh of men as the flesh of other animals." And Cicero remarked that "man was destined to a better occupation than that of pursuing and cutting the throats of dumb creatures."

Plutarch remarks: "How could man bear to see an impotent and defenceless creature slaughtered, skinned, and cut up for food? How could he endure the sight of the convulsed limbs and muscles? How bear the smell arising from the dissection? Whence came it that he was not disgusted, and struck with horror, when he came to handle the bleeding flesh, and clear away the clotted blood and humours from the wounds? We should therefore rather wonder at those who first indulged themselves in this horrible repast than at such as have humanely abstained from it."

Dr. Cheyne says: "I have sometimes indulged the conjecture that animal food and *made* or artificial liquors, in the original frame of our nature and design of our creation were not intended for human creatures. They seem to me neither to have those strong and fit organs for digesting them (at least such as birds and beasts of prey have that live on flesh); nor those cruel and hard hearts, nor those diabolical passions, which would easily suffer them to tear and destroy their fellow creatures; at least, not in the first and early ages, before every man had corrupted

his way, and God was forced to exterminate the whole race by a universal deluge, and was also obliged to shorten their lives from nine hundred or a thousand years to seventy."

"To see the convulsions, agonies, and tortures of a poor fellow-creature," continues Dr. Cheyne, "whom they cannot restore or recompense, dying to gratify luxury, must require a rocky heart, and a great degree of cruelty and ferocity." "I cannot find," adds he, "any great difference, on the foot of natural reason and equity only, between feeding on human flesh and feeding on brute animal flesh, except custom and example. I believe some rational creatures would suffer less in being fairly butchered than a strong ox or red deer; and, in natural morality and justice, the degrees of pain here make the essential difference." \*

Doctor Hawkesworth observes: "Among other dreadful and disgusting images which custom has rendered familiar are those which arise from eating animal food. He who has ever turned with abhorrence from the skeleton of a beast which has been picked whole by birds or vermin, must confess that habit alone could have enabled him to endure the sight of the mangled bones and flesh of a dead carcass which every day cover his table; and he who reflects on the number of lives that have been sacrificed to sustain his own, should inquire by what the account has been balanced, and whether his life is become proportionably of more value by the exercise of virtue and piety, by the superior happiness which he has communicated to reasonable beings, and by the glory which his intellect has ascribed to God." †

"The Gentoos rear numerous herds of cattle; but such is their veneration for these animals—on account of their useful and patient services to man—that to kill or even maim one of them is deemed a capital offence." ‡ "Among the Wallachians, though there is no positive institution to the contrary, yet the women never destroy the life of any creature. Whether this custom was founded by some of their ancient legislators, or whether it originated from incidental circumstances, is uncertain; but, however that may be, nothing can be more suitable to the gentleness and timidity which form the most beautiful and engaging part of the female character." §

"Can there be a more gratifying spectacle," observes Dr. Roget, "than to see an animal in the full vigour of health, and the free exercise of its powers, disporting in its native element, revelling in the bliss of existence, and testifying, by its incessant gambols, the exuberance of its joy?" Yet cruel man—to gratify

\* Cheyne's Essay on Regimen.

† Edition of Swift's Works.

‡ M. De Page's Travels. Vol. II., p. 27.

§ Dr. W. Alexander's History of Women. Vol. I., p. 366.

an acquired habit, which (as I shall hereafter show) only mars and abridges his existence—cuts short their innocent pleasures, and causes them to agonise to no useful purpose. “By long habit and familiarity with scenes of blood, men at length view them without emotion. But observe the young child, which is told that the chicken it has fed and played with is to be killed. Are not the tears it sheds, and the agonies it endures, the voice of nature itself crying within us, and pleading the cause of humanity?” “The merciful man is merciful to his beast,” and the man of sensibility “will hate the brutal pleasures of the chase by instinct. It will be a contemplation full of horror and disappointment to his mind that beings capable of the gentlest and most admirable sympathies should take delight in the death-pangs and last convulsions of dying animals.”

“There is no antipathy between man and other animals which indicates that nature has intended them for acts of mutual hostility. Numerous observations of travellers and voyagers have proved that in uninhabited islands, or in countries where animals are not disturbed or hunted, they betray no fear of men; the birds will suffer themselves to be taken by the hand, the foxes will approach him like a dog.” These are no feeble indications that nature intended him to live in peace with the other tribes of animals.

Pythagoras, according to Ovid, draws the line for slaughter, as follows:—

Take not away the life you cannot give;  
For all things have an equal right to live.  
*Kill noxious creatures*, whom 'tis sin to save;—  
This *only* just prerogative we have.  
But nourish life with vegetable food,  
And shun the sacrilegious taste of blood.\*

OBJECTIONS.—“Why were sheep and oxen created if not for the use of man?” But it is only pride and imbecility in man to imagine all things made for his sole use. There exist millions of suns and their revolving orbs which the eye of man has never perceived: myriads of animals enjoy their pastime unheeded and unseen by him; many are injurious and destructive to him. All exist for purposes but partially known. Yet we must believe, in the general, that all were created for their own enjoyment, for mutual advantage, and for the preservation of universal harmony in nature. If, merely because we can eat sheep pleasantly, we are to believe that they exist only to supply us with food, we may as well say that man was created solely for various parasitical animals to feed on, because they do feed on him.

But again, it is said: “If we allow sheep and oxen, and hares

\* Ovid's *Metam.*, xv., 705.



and pheasants, to multiply, they will eat up our food." I might reply,—it is only by the care and provision and defence of man that they do so multiply. But we have a right to postpone all reply to this objection, until we see the predicted danger become urgent.

Again : "What shall we do for wool and leather, if animals are not to be killed?" Great national changes are slow, and in long time an abundance of substitutes for wool and hides will be found. Besides, when flesh is not wanted, but only wool and milk, numerous flocks will be kept to supply these articles only. Indeed, for wool poor lands suffice, and the wool from them is of finer quality. It is attested that the finest wool has in Norfolk become very scarce, because of the effort to fatten up the sheep and get more meat from them.

Again : "How can the land be cultivated without the manure which the animals yield?" It suffices to ask the objector whether he believes that the animals can yield to the earth other elements, or more in quantity, than the vegetable substance which they have taken out of it : if not, his objection falls to the ground at once. But, besides, at present much of our strongest and most valuable manures is wasted. An entire reconstruction of our industrial economy is required, and will take place. Our knowledge of botany is ever on the increase, and we shall learn far better than now how to afford to each plant its specific food.

Some persons, to justify feeding on flesh, contend that the sum total of animal pleasure is thereby promoted, since it encourages the breed of gregarious animals. But when we consider how miserably many of them are cooped up or mutilated, and subjected to disease, privation, and suffering, besides that which is incident to their death by human hands, the preponderance, whether of pain or pleasure, becomes (I think) too difficult for us to settle. Moreover, it may be maintained that if we bring animals into existence, it is unjust to abridge their liberty, destroy their instincts, and hinder their natural pleasures. But the whole argument is superfluous to such a nation as England ; inasmuch as the number of these animals is a hindrance to the increase of human population. It will hereafter be proved that by cultivating for crops our best grass lands, and living on a vegetable diet, we could support a far larger mass of human beings—an object much more worthy of our attention than to promote the total mass of brute enjoyment.

I shall conclude this part of the subject with the excellent address of an ancient and distinguished priest of India :—  
 "Children of the Sun, listen to the dying advice of your faithful and affectionate instructor, who hastens to the bosom of the great God to give an account, and to enjoy the expected rewards of his services ! Your regimen ought to be simple and inartificial. Drink only the pure, simple water. It is the beverage of nature,



and not by any means, nor in any way, to be improved by art ! Eat only fruit and vegetables ! Let the predaceous animals prey on carnage and blood ! Stain not the divine gentleness of your natures by one act of cruelty to the creatures beneath you ! Heaven, to protect them, hath placed you at their head ! Be not treacherous to the important trust you hold by murdering those you ought to preserve, nor defile your bodies by filling them with putrefaction. There is enough of vegetables and fruits to supply your appetites without oppressing them by carrion or drenching them in blood."

## PART III.

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# BEST FOOD OF MAN.

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### CHAPTER I.

#### VEGETABLES SUFFICE FOR OUR NUTRITION

MAN'S original food and natural food must be his best food. Nevertheless, I shall now pursue a line of argument independent of all which has preceded.

1. I must first propound to the reader what purposes food fulfils. The human body in every instant undergoes change: it perpetually moves, perpetually decays, and perpetually has to be rebuilt. The action of the atmosphere on the blood is the ultimate cause: air received into the lungs meets the dark blood of the veins—dark because charged with *carbon* (the element of coal). The air attracts the carbon out of the blood, and leaves it scarlet. The carbon, united to the oxygen of the air, makes carbonic acid, a suffocating gas which is breathed out. A portion of oxygen remains in the blood, which is now driven by the heart into the arteries, and reaches all parts of the system. In its passage it diffuses animal heat, replaces deficiencies, and takes up all the decayed matter, which again it carries back to the lungs, unless it finds some other exit. Thus, muscles, tendons, nerves, bones, nails, hair, all the solids and all the fluids of the body, perpetually decaying, are perpetually renewed by the blood, which has been called liquid flesh.

The blood is thus gradually exhausted, and requires supply; and its supply must be had from food. The food must compensate the tissues for their destruction by vital actions, and by the oxygen of the air under which they *rust*. Such is the *first* end to be served by food. A *second* is to supply animal heat. For the former service the food must contain the chemical element entitled nitrogen, or azote, which abounds in albumen (or white of egg); hence Dr. Prout calls this sort of aliment the *albuminous*. Albumen and

gluten appear to be fundamentally the same, and are the substance of the human muscles. The other elements of food, which support respiration and supply animal heat [as also vital force], are divided by Dr. Prout into two groups—the saccharine, comprehending sugar, starch, and gum ; and the oleaginous, in which he includes oils, fat, and spirits. Passing over some few points of controversy, we find no question that this second element of food must supply carbon and hydrogen,\* which are essential for vital force and animal heat, as also to save the lungs from destruction by the oxygen of the air. Yet I shall presently assign reasons for doubting whether this is the sole use of the saccharine element.

2. We next inquire whether vegetables will furnish to man these necessary elements of food. Some years ago, when it was supposed that vegetable substance was destitute of “azote,” or “nitrogen,” it was argued that, THEREFORE, for the renewal of our muscular tissues flesh meat was needed. But as the flesh of sheep and oxen is acknowledged to contain as much† nitrogen as the flesh of man, I ask, whence do *they* derive it? They do not eat flesh. Then man, without eating flesh, *may get it as they do*, since his anatomy is like theirs ; whether they get it from their vegetable food, or from the nitrogen in the atmosphere. This is a thorough and sufficient reply. Nevertheless, I find it instructive to go minutely into the question of the supply of nitrogen.

The carnivora never masticate their food, but the herbivora and man do ; and in the process the food becomes mixed with the saliva, which (according to Liebig) encloses air in the shape of froth. “This air,” says he, “by means of the saliva, reaches the stomach with the food, where its oxygen enters into combination ; while its nitrogen is given out through the skin and lungs, *without being applied to any use in the animal economy.*” The last words of Liebig seem to me supported by no evidence ; nor can I believe that nature would allow nitrogen to be incessantly passing through the various tissues of the body without answering some useful purpose. Is it not possible that additional nitrogen may be thus supplied to the system when the food does not contain enough? To this Dr. Prout seems to assent when he remarks : “This involution of azote may be considered as *one* of the great objects of mastication and insalivation, which are

\* Water is composed of hydrogen and oxygen ; atmospheric air of nitrogen and oxygen. But the hydrogen and oxygen can also unite in a very fierce flame. Carbon can be burnt by oxygen, as coal in a grate is burnt. Hence these elements serve to supply animal heat. Oxygen is the principal element which heats or burns in acids and in flame.

† Nay, Macaire and Marcet found the same proportion of nitrogen both in the *chyle* and in the *blood* of animals, whatever the food—the very same proportion in the carnivorous as in the herbivorous.

almost peculiar to the animals that subsist chiefly on saccharine matters.”\*

Chemists generally assert that food is the only means by which azote can be added to the blood (indeed, that only *plants* have the power of converting unorganized matter, such as the nitrogen of the air, into organized tissue); but some physiologists are of a different opinion. Indeed, Dr. Prout avows his belief that “under certain extraordinary circumstances vital agents . . . may be able to *decompose* principles which are still considered as elementary; nay, to *form* azote or carbon.” Sylvester Graham declares himself on the same side: “We have no right to assume that the vital forces possess no higher energies of analysis than are exerted by the chemical agents of the inorganic world. We have reason to believe that vitality decomposes the substances which chemists call *elements*, &c.”

Vegetables, if supplied with ammonia, can form gluten out of what would else have been starch. Dr. Prout found albumen in the duodenum, when none was found in the stomach. He supposes the azote (nitrogen) of the albumen to be supplied by the blood, and that the blood which has parted with azote goes into the bile, a secretion which is remarkably deficient in azote.

The vital organ which is called the pancreas is very large in the herbivora, and its peculiar fluid very copious. It is smaller in the wild cat than in the domestic cat, which lives partly on vegetable food. Its use has been unknown. Tiedemann, Gmelin, and other physiologists now maintain that it is (in some sense) a laboratory of azote, which it adds to the *chyme*; *i.e.*, to the food as dissolved by the stomach. It would seem that the pancreas is a compensating organ, to maintain a sufficient proportion of azotised compounds in the body. Müller’s opinion concerning the organ called the spleen assigns to it a similar action on the lymphatic system, to aid the conversion of the oleaginous principles of food into azotized. If so,—then, whenever the food of an animal does not contain the proportion of chemical elements desirable for the blood, the vital powers bring a partial remedy.

Again, not only by our masticating, but also by our breathing, the nitrogen from the air enters our system. Common air has 76 parts of nitrogen, mixed with 23 of oxygen; and chemists wish us to believe that the sole use of the nitrogen is to *dilute* the oxygen. But in nature we rather find two or three purposes

[\* Many vegetarians complain of their food as *windy*. The complaint is too general to be causeless. What if, on farther inquiry, it be found to result from haste of eating or bad grinders? The air which is in new bread is not merely troublesome, it is even dangorous, if the bread be swallowed with little chewing; but if it be perfectly chewed, bread, however new, is pleasant in the stomach. Is it not then possible that the most windy food, as peas or beans, if duly chewed, will lose its unpleasant property, and at the same time become more nutritious? Hard apples do not need the grinders; the foreteeth and pointed teeth suffice; and the more thoroughly they are bitten, the more satiating is a small supply, and the more nutritious.—Ed.]



accomplished by one arrangement, than two agents at work, of which one has only the function of moderating the other. Nitrogen, being more than three-fourths of the air, must surely have a direct and positive use. Experiment shows that the blood sometimes absorbs nitrogen, sometimes exhales it; why should it not enter into combination with the blood whenever an additional quantity of it is required? When nitrogen meets with hydrogen *in a nascent state* within an enclosed space, they unite and form ammonia; and, since hydrogen is developed, not only in the whole extent of the alimentary canal, but also in the capillaries (or fibrous small tubes)—where the disintegration of the worn-out tissues takes place—we have all the conditions necessary for this combination.

[The Author here goes further into the opinions of other physiologists which, directly or indirectly, support his opinion, that *the nitrogen contained in the tissues of man and of the herbivora may be obtained from the atmosphere when deficient in the food.*]

That azote in food is not indispensable may also be inferred from other facts. Adanson asserts that the nomadic Moors live chiefly on gum senegal. Hasselquist relates that 1,000 Abyssinians subsisted for two months on gum arabic alone. Those who gather gum from the trees in Arabia and Senegal live (for a time) almost entirely on it, and six ounces in 24 hours have proved sufficient for a man's support. Humboldt observed the Caraccas mule-drivers to prefer unprepared sugar to fresh animal food; and it is well known that negroes become fat and vigorous from chewing the sugar-cane. Yet gum and sugar have little or no azote.

Potatoes and rice also have very little azote; yet are not at all bad food. Maize is said to contain no gluten, and little (if any) ready-formed saccharine matter; yet animals fattened on it become firm in flesh. Horses fed on it are strong and hardy; so are the races of men who make it their ordinary food. Apparently then, the necessary azote must be got from the air.

But if the opposite be true, and azote in the food is necessary, we now know that azote is present in most parts of vegetables, particularly in the seeds, juices, and nascent parts; the membranes alone being destitute of it. And, in general, all nutritive substances contain both principles, the glutinous and the saccharine, though in varying proportions. - Dr. Prout has shown that milk contains an albuminous substance (*casein*, or the cheesy element), oily matter (the butter); and no inconsiderable amount of sugar; thus including his three staminal principles. But it must be carefully kept in mind that all good food contains also a large quantity of *innutritious matter, which is as requisite for healthy digestion as that which is nutritious.*

The experiments of Liebig and other excellent chemists have

established the perfect identity of animal and vegetable fibrin, animal and vegetable albumen, and animal and vegetable casein; each containing precisely the same amount of the vegetable principle named *protein*. Prout and Liebig think that the digestive process extracts oxygen out of starch and other saccharine matters, and converts them into fat, an oleaginous compound. We may on the whole conclude, that the Divine wisdom has enabled animals, as well as vegetables, to avail themselves of the nitrogen in the air as a compensation for any moderate deficiency of that element in their food.

Man in warm climates has easy access to fruit, rice, and vegetables, in which carbon and hydrogen far prevail over nitrogen (and the opponents of vegetarianism generally concede that in *such* climates vegetarian food suffices). In cold and temperate regions, where neither pleasant fruits nor profitable crops are spontaneous, man necessarily became a flesh eater, and has learned to indulge largely in animal food. Hence dyspepsia, liver disease, gout, gravel, and many other maladies.

ON ALLEGED INDIGESTION FROM VEGETARIAN FOOD.—Dr. Cullen attests that portions of apple have been thrown up, unaltered, two days after they were swallowed; though Dr. Beaumont found that apples require only about an hour and a-half for digestion. Three principal causes may be assigned for such anomalies. 1. The habit of exclusive flesh-eating may induce a corresponding inability to digest certain forms of vegetable food; just as the kitten fed on vegetarian diet was made sick by flesh. 2. Most people in this country eat fruit precisely when their stomach is full, perhaps over full, of fish, flesh, and fowl, with rich sauces and condiments; and then the whole blame is laid on the fruit, when it does not agree. 3. Fruit, as all vegetable food, requires to be carefully chewed and well mixed with saliva before it is swallowed; else it may remain long in the stomach ill digested. If it be bolted, especially with seeds and flakes of skin, it may be carried into the duodenum (as shown by the experiments of Schultze) prematurely. The disturbance caused hereby to the small intestines is improperly ascribed to the *acidity* of the fruit.

A short statement of facts from Dr. Beaumont's tables will confirm these remarks. He informs us that the following articles were converted into chyme, or digested, in the times mentioned:—

	H.	M.
Rice, boiled soft ... ..	1	0
Apples, sweet and ripe ... ..	1	30
Sago, boiled ... ..	1	45
Tapioca, Barley, stale Bread, Cabbage with vinegar, raw, boiled Milk and Bread, and Milk cold ..	2	0
Potatoes roasted, and Parsnips boiled...	2	30
Baked Custard...	2	45

	H.	M.
Apple Dumpling ... ..	3	0
Bread Corn baked, and Carrots boiled ... ..	3	15
Potatoes and Turnips boiled, Butter and Cheese ...	3	30
Tripe and Pigs' Feet ... ..	1	0
Venison ... ..	1	35
Oysters undressed, and Eggs raw.. ... ..	2	3
Turkey and Goose ... ..	2	30
Eggs soft-boiled, Beef and Mutton roasted or boiled...	3	0
Boiled Pork, stewed Oysters, Eggs hard-boiled or fried	3	30
Domestic Fowls ... ..	4	0
Wild Fowls, Pork salted and boiled, Suet ... ..	4	30
Veal Roasted, Pork and Salted Beef ... ..	5	30

Dr. Adam Smith, in his "Wealth of Nations," says: "It may, indeed, be doubted whether butcher's meat is anywhere a necessary of life. Grain, and other vegetables, with the help of milk, cheese, and butter, or oil (where butter is not to be had), it is known from experience can, without any butcher's meat, afford the most plentiful, the most wholesome, the most nourishing, and the most invigorating diet." \*

Our second question is, I think, now sufficiently answered. Vegetable food *does* furnish to man all the elements needful for the renewal of his body.

ON ILL-IMAGINED EXPERIMENTS.—Majendie fed dogs upon sugar and distilled water, and they died in about a month. Other dogs fed by him, some upon olive oil and water, some on gum, some on butter, died in four or five weeks. Tiedemann and Gmelin fed geese, one with sugar and water, another with gum and water, a third with starch and water. All gradually lost weight, and died in three weeks or a month. None of the food contained nitrogen: death is attributed to the lack of this substance.

But the whole process is a fallacy, as other experiments show. Majendie fed a dog on *white* bread and water, and though the gluten of white bread is highly nitrogenised, the animal lived no more than fifty days. Tiedemann and Gmelin fed a goose on pure albumen—boiled white of egg cut up—and it died on the forty-sixth day. Dogs fed on cheese alone, or on hard eggs, grow feeble, and loose their hair. Animals fed exclusively on gelatine (jelly)—the most highly nitrogenized principle in the food of the carnivora—die with all the symptoms of starvation.

These facts suffice to prove that the death of the dogs and geese first named ought to be ascribed to the same head as the latter cases, *i.e.*, not specially to the deficiency of nitrogen, but to the artificial and concentrated form of the aliment. The food given was totally unnatural, and violated physiological laws.

\* Vol. III., p. 337.



“To feed animals with substances produced by art,” says Raspail, “is very frequently to load their stomachs, while leaving them to die of hunger.” An ass fed by Majendie on dry rice, and afterwards on boiled rice, lived only fifteen days ; whereas a cock was fed with boiled rice for several months, with no ill-consequences : hence, among the herbivorous and frugivorous, the effects vary. In many such experiments the very great error is committed of giving *concentrated* food, abstract and isolated elements. “Too great a proportion of nutritious matter in our food,” says Graham, “is little less dangerous to our digestive organs, and to the vital interests generally, than too small a proportion.” Natural food is a compound of nutritious and innutritious matter. One function of the organ is to separate them, and the non-nutritious elements stimulate the fibres of the intestines to their work, as Combe observes.

Many recorded experiments illustrate these remarks. The dog fed by Majendie on white bread and water died in the course of seven weeks ; but another fed by him on brown soldiers’ bread (*pain de munition*) did not suffer. When dogs were fed on sugar and water they died in a month, but if a considerable portion of sawdust be mixed with the sugar, their health will not be affected by it, although they are naturally carnivorous animals. It was also shown that an ass fed on rice died in fifteen days ; but if a large quantity of chopped straw had been mixed with the rice, he would have continued to live and be well. “Horses fed exclusively on meal or grain will die in a short time ; but mix their meal or grain with a suitable proportion of cut straw or wood-shavings, and they will thrive and become fat. And it is an interesting fact that, if horses be fed on grain alone, with the exception of water, for a number of days, they will instinctively gnaw the boards, or whatever woody substance is within their reach.” I might here give several well-attested anecdotes in confirmation of what has been now stated, but the two following will be sufficient.

“About the 1st of December, 1800,” says Captain John Matthews, of Maine, “I left Bath, in the schooner *Betsey*, with a deck load of cows, oxen, horses, and one mule. Expecting to have a short passage, I took but little hay. When we had been out several days a gale came on, which swept away most of our hay, and drove us so far out of our course that we were fourteen days without hay, before we made the island of Bermuda. We had plenty of corn and potatoes on board, with which we fed our stock. After three or four days the stock all began to be indisposed, and to droop, and to be unwilling to eat the food we gave them ; and they seemed to be very uneasy, and to crave something which they had not, and the mule began to gnaw a spruce spar which lay before him. This suggested to me the thought that my stock all required more woody matter with their food ;



and I immediately caused some spruce and oak spars to be shaved up with a drawing knife, and gave the shavings to the stock. All the young cattle and horses, and the mule, ate these shavings greedily, and were very soon improved in their health, and continued to do well the remaining part of the voyage. The mule ate them more freely than any other animal on board, and he improved most; indeed, he was quite plump and sleek when he arrived in port. Some of the older cattle and horses would not eat the shavings, and every one of these died before we got in. About the year 1830," continues Captain Matthews, "returning from Bonavista, one of the Cape de Verde islands, I brought several goats with me. Having no hay on board, I fed them on grain and shavings. They came every day for their shavings, as regularly as they did for their grain, and ate them as greedily."

These observations on the concentrated nature of food are equally applicable to man as to the lower animals. Dr. Stark made many curious and whimsical dietetic experiments on his own person, and fell a sacrifice in the prosecution of his inquiries. The proposed object of his experiments was to prove that a *pleasant* and *varied* diet is more conducive to health than a simple one; yet most of the dishes of which he partook were neither natural, simple, nor pleasant, but exceedingly disagreeable compounds of concentrated substances. He began with fine flour—bread and water—from which he proceeded to bread, water, and sugar; then to bread, water, and oil of olives; then to bread, water, and milk. Afterwards he tried bread and water, with roasted goose; then bread and water, with boiled beef; then stewed lean of beef, with gravy; then oil of suet and water; then flour, oil of suet, water, and salt; then flour, water, and salt; then bread and fat bacon; then infusion of tea and sugar; then bread or flour, with honey and an infusion of rosemary. A number of other dishes equally disagreeable, and some of them more so, were successively tried. He commenced in good health and vigour, which gradually declined; and, at the end of nine months, he died, after suffering much uneasiness.

Dr. Stark's experiments prove quite the contrary of what they were designed to establish, and clearly show that concentrated alimentary substances, however varied, are destructive to health and life. This case might be urged, with much propriety, against too great a variety of food, and in favour of simplicity of diet. Even nations on whom science has not yet dawned are aware of the advantage of mixing innutritious substances with highly concentrated food. Thus the Kamschatdales, who are frequently compelled to live on fish-oil, judiciously form it into a paste with sawdust, or the rasped filings of indigenous plants.

Much has been written by physiologists to demonstrate the necessity of variety of food, by which they generally mean a mixture of animal and vegetable substances; and they quote

many instances of ill effects arising from simplicity of diet. I am confident, however, that all the injurious effects that have been referred to simplicity of diet have arisen from improper and unnatural food, or from food in too concentrated a state. Müller informs us that in Denmark a diet of bread and water for four weeks is considered equivalent to the punishment of death. There must be some fallacy in this statement ; but, if correct, the injury produced may, perhaps, be attributed to the extraordinary fineness of the flour, and the superabundance of gluten which it contains. Knight, in his "Physiological and Horticultural Papers," says : "Bread made of wheat, when taken in large quantities, has probably, more than any other article of food in use in this country, the effect of overloading the alimentary canal ; and the general practice of French physicians points out the prevalence of diseases thence arising amongst their patients." All the evils said to be produced by living upon bread are due to our modes of refining upon nature ; and though it must be admitted that bread made from the finest wheaten flour, if eaten in great abundance, and without a due admixture with innutritious matter, will be productive of serious consequences to health ; yet it can be shown, upon good authority, that many individuals have subsisted for years on coarse undressed wheat-meal bread and water alone, and have not only improved in health, but become remarkably vigorous and robust. Children, whose food for a considerable time consists of superfine flour-bread, arrow-root, and other concentrated substances (such as sugar, butter, &c.), may appear fat and well, but do not acquire strength. They generally become weak and sickly, and are often covered with sores. Hence, some physicians who have written on the diet of children, have spoken in severe terms against confining children to an exclusively vegetable diet. But if a child be put upon a diet of good bread, made of undressed wheat-meal, with milk-and-water, or pure soft water, for drink, and be allowed to indulge pretty freely in the use of good fruits in their seasons, none of the evils which result from concentrated forms of aliment, and which are attributed to vegetable diet, will be experienced ; but the child, if in other respects properly treated, will be healthy, robust, and sprightly.

"Bulk," says Dr. Beaumont, "is nearly as necessary to the articles of diet as the nutrient principle. They should be so managed that one will be in proportion to the other. Too highly nutritive diet is probably as fatal to the prolongation of life and health as that which contains an insufficient quantity of nourishment. It is a matter of common remark among old whale-men, that, during their long voyages, the coarser their bread the better their health. "I have followed the seas for 35 years," said an intelligent sea-captain to Mr. Graham, "and have been in almost every part of the globe, and have always found that the



coarsest pilot-bread, which contained a considerable portion of bran, is decidedly the healthiest for my men." "I am convinced, from my own experience," says another captain, "that bread made of the unbolted wheat-meal is far more wholesome than that made from the best superfine flour, the latter always tending to produce constipation." Captain Benjamin Dexter, in the ship *Isis*, belonging to Providence, R. I., arrived from China in December, 1804. He had been about 190 days on the passage. The sea-bread, which constituted the principal article of food for his men, was made of the best of superfine flour. He had not been long at sea before his men began to complain of languor, loss of appetite, and debility. These difficulties continued to increase during the whole voyage, and several of the hands died on the passage of debility and inanition. The ship was obliged to come to anchor about 30 miles below Providence, and such was the weakness of the men on board that they were not able to get the ship under way again, and the owners were under the necessity of sending men down from Providence to work her up. When she arrived the owners asked Captain Dexter what was the cause of the sickness of his men. He replied—"The bread was too good."

These instances confirm the excellent observations of Dr. Prout, who says: "Of the numerous shapes assumed by lignin, the best adapted for excremental purposes is undoubtedly the external covering of the seeds of the *cerealia*, and particularly of wheat. Bread, therefore, made with undressed flour, or even with an extra quantity of bran, is the best form in which farinaceous and excremental matters can be usually taken, not only in diabetes, but in most of other varieties of dyspepsia accompanied by obstinate constipation. This is a remedy, the efficacy of which has been long known and admitted; yet, strange to say, the generality of mankind choose to consult their taste rather than their reason; and, by officiously separating what nature has beneficially combined, entail upon themselves much discomfort and misery."\* The mucous membrane of the stomach and intestines is in some persons so irritable that it cannot bear furfureaceous substances; and in such cases the green matter of the leaves of plants, and the skin of fruit, may form a proper substitute.

"Debility, sluggishness, constipation, obstructions, and morbid irritability of the alimentary canal, have been among the principal roots of both chronic and acute disease in civic life in all parts of the world, and in all periods of time; and concentrated forms of food, compound preparations, irritating stimuli, and excess in quantity, have been among the principal causes of these difficulties."

\* *Nature and Treatment of Stomach and Renal Diseases*, p. 45.



ARGUMENT FOR A MIXED DIET.—Some have contended that a mixture of animal and vegetable food, in certain proportions, contains, within the least possible weight, all the chemical principles requisite for supplying the waste of structure, and for the production of animal heat; and that neither animal nor vegetable food, taken separately, answers the purpose so well, unless in much larger quantities. Presuming that a man, taking moderate exercise, requires 18ozs. of starch, and 5ozs. of albumen or gluten, &c., in twenty-four hours, Mr. Johnston \* calculates that these will be best supplied by  $1\frac{3}{4}$ lb. of bread, and half-a-pound of animal food. Thus:—

	For Respiration.	For Waste of Muscle.
$1\frac{3}{4}$ lb. of Bread, yielding	18ozs of Starch, and	3ozs. of Gluten.
$\frac{1}{2}$ lb. of Beef, „		2ozs. of Fibrin.
Total consumed by Respiration and the Ordinary Waste, 18ozs. of Starch, and 5ozs. of Gluten and Fibrin.		

This calculation is based on the supposition that wheat-flour contains 15 per cent of dry gluten; and, as Mr. J. says,  $1\frac{3}{4}$ lb. (or 28ozs.) of bread contain 3ozs. of gluten,—the same as 20ozs. of flour, we learn that he considers 20ozs. of flour to make 28ozs. of bread. But in a previous table he informs us that 15,000lbs. of wheat contain 825lbs. of starch, 315lbs. of dry gluten, and 60lbs. of sugar. Now divide each of these numbers by 15, and we find that flour contains 21 per cent of gluten, and about 60 per cent of starch and sugar. With this correction we have—

$1\frac{3}{4}$ lb. of Bread = 20ozs. of Wheat-Flour, yielding	12ozs. of Starch, and $4\frac{1}{5}$ ozs. of Gluten.
$\frac{1}{2}$ lb. of Beef, yielding	2ozs. of Fibrin.
Total—12ozs. of Starch, and $6\frac{1}{5}$ ozs. of Gluten and Fibrin.	

There now appears a deficiency of 6ozs. of starch, and a surplus of  $1\frac{1}{2}$ oz. of gluten, when bread and beef are taken. Again: 2lbs. of bread yield  $13\frac{2}{7}$ ozs. of starch, and  $4\frac{4}{5}$ ozs. of gluten, leaving a deficiency of only  $4\frac{2}{7}$ ozs. of starch to be supplied by potatoes, rice, &c., and  $\frac{1}{5}$  of an oz. of gluten; so that, from Mr. J.'s own data,  $2\frac{1}{4}$ lbs. of beef and bread do not supply the required amount of starch and albumen, so well as 2lbs. of bread; and this is precisely the weight of bread that has been found practically sufficient for a man taking ordinary exercise. Vogel says, wheat-bread contains 53.5 per cent of starch; consequently, 2lbs. will contain  $17\frac{1}{10}$ ozs. of starch—only  $\frac{9}{10}$  of an oz. short of the requisite quantity.

\* James T. W. Johnston's Elements of Agricultural Chemistry and Geology.

## CHAPTER II.

## VEGETARIAN PRACTICE OF NATIONS.

It would be no difficult matter to prove that a considerable majority of the human race seldom or never taste animal food. When Boadicea, queen of the ancient Britons, was about to engage the Romans in a pitched battle, in the days of Roman degeneracy (A.D. 61), she encouraged her army by an eloquent speech, in which she says: "The great advantage we have over them is that they cannot (like us) bear hunger, thirst, heat, or cold. They must have fine bread, wine, and warm houses. To us every herb and root are food, every juice is our oil, and every stream of water our wine."

A considerable proportion of the labourers in various parts of England and Wales, even at the present day, eat but little animal food; and, about seventy or eighty years ago, the principal part of the labour in this country was performed by those who seldom or ever tasted flesh meat. It is true that, in the time of Queen Elizabeth, we read of animal food and flagons of ale even at breakfast\*; but Sir F. M. Eden, whose elaborate researches have thrown much light on this subject, states that the substantiality of diet, for which the sixteenth century is renowned, was confined chiefly to the tables of persons of rank. "A maid of honour," says he, "perhaps breakfasted on roast beef; but the ploughman, in these good old times (as they are called), could, I fear, only banquet on the strength of water-gruel." ("State of the Poor." Vol. I., p. 116.) It is calculated by Mr. McCulloch that, "on the most moderate computation, the consumption of butcher's meat in the metropolis, even as compared with the population, is twice as great at this moment as in 1740 or 1750." †

The food of the native Irish was (principally if not exclusively) vegetable, long before the potato was known in Europe. Nay, in almost the first glimpses we have of them, they are represented to us as herbivorous, *ποηφάλου*; for such is the expression of Solinus. So they continue to be described by Spencer, Hollingshed, and Camden. The latter says: "As for their meats, they feed willingly upon herbs and water-cresses, especially upon mushrooms, shamrocks, and roots;" in which he is corroborated by Ware, the Irish antiquary, who wrote about the time when the potato was introduced. The food of the Irish peasantry of

\* "Notwithstanding all that is said," observes McCulloch, "of the rude hospitality, and of the consumption of ale and beer, in these remote times, it is abundantly certain that the labouring classes consume, at this time, ten times more malt liquor than their ancestors ever did, in either the fifteenth or sixteenth century."—*Statistical Account of the British Empire. Vol. II., p. 496.*

† *Statistical Account of the British Empire. Vol. II., p. 497.*

the present day is almost wholly composed of the potato, without any other vegetable, and only in favourable circumstances is it accompanied with milk. In reference to this diet of the Irish it has been observed: "When I see the people of a country with well-formed, vigorous bodies, and their cottages swarming with children—when I see their men athletic and their women beautiful, I know not how to believe them subsisting on unwholesome food."\* It has even been stated, on authority which cannot be doubted, that rents have been raised because the tenant has been seen to eat "apple taters"—potatoes of the best sort—the landlord considering their quality too good for the consumer, who should have sold them for his benefit, and substituted coarser in their place. † I do not, however, name this by way of recommending a potato-diet; far from it. I sincerely wish that those poor but industrious creatures could obtain a plentiful supply of corn, rice, milk, fruit, &c. The only object in naming the subject here is to show upon what a scanty diet it is possible for the human frame to be supported. Dr. Smith, in his "History of Kerry," declares this food to be sufficient for preserving the Irish labourers in full health and vigour.

The hardy Scotch, also, are almost exclusively confined in their diet to the productions of the field and garden. "So late as 1763," says Mr. McCulloch, ‡ "the slaughter of bullocks for the supply of the public markets was a thing wholly unknown even in Glasgow, though the city had then a population of nearly 30,000! Previously to 1775, or perhaps later, it was customary in Edinburgh, Glasgow, and the principal Scotch towns, for families to purchase in November what would now be reckoned a small, miserable, half-fed cow or ox, the salted carcass of which was the only butcher's meat they tasted through the year." At the period of their greatest simplicity, manliness, and bravery, the Greeks and Romans appear to have lived almost entirely on plain vegetable preparations, and at the present time bread, fruits, and roots constitute the chief nourishment of the Italians, and of the mass of the population of Southern Europe.

The Lazzaroni of Naples are a tall, stout, well-formed, robust, and active class of people, and yet subsist chiefly on coarse bread and potatoes, and their drink of luxury is a glass of iced water, slightly acidulated.

In France a vegetable diet prevails to a very great extent. M. Dupin informs us that two-thirds of the French people, to this day, are wholly without animal food, and live on chestnuts, or maize, or potatoes. The peasantry of Norway, Sweden, Russia, Denmark, Poland, Germany, Turkey, Greece, Switzerland,

\* Young's Tour in Ireland. Vol. II., Part 2, p. 33.

† Penny Cyclopædia. Article "Food of Labourers."

‡ Statistical Account of the British Empire. Vol. II., p. 502.



Spain, Portugal, and of almost every other country in Europe, subsist principally, and most of them entirely, on vegetable food.

The inhabitants of Asia and Africa are compelled, by their climate, to refrain in great measure from animal food. The Persians, Hindoos, Burmese, Chinese, Japanese, the inhabitants of the East India Archipelago, and of the Himalaya mountains, and, in fact, most of the Asiatics live upon vegetable productions. It has been maintained by Dr. Van Cooth (no vegetable-eater himself), in a learned medical dissertation, that the great body of the ancient Egyptians and Persians "confined themselves to a vegetable diet;" and the Egyptians of the present day, as well as the negroes (whose great bodily powers are well known), live chiefly on vegetable substances. The Mexican Indians and South Sea Islanders were formerly remarkable for their great temperance and attachment to a vegetable diet; but they have recently been corrupted by the introduction of European customs. I might greatly extend the list of those who subsist upon vegetable productions; but, as they will be hereafter referred to, the mention of them here is unnecessary. It has been observed that "from two-thirds to three-fourths of the whole human family, from the creation of the species to the present moment, have subsisted entirely, or nearly so, on vegetable food; and always, when their alimentary supplies of this kind have been abundant and of a good quality, and their habits have been in other respects correct, they have been well nourished, and well sustained in all the physiological interests of their nature."

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### CHAPTER III.

#### ON THE STIMULUS IN FOOD.

ALL food is both nutritive and stimulative, and upon the just proportion of these qualities the excellence of any article of diet largely depends. If the stimulus be in excess, the functions are abnormally quickened, life flies too fast, pleasure is vivid, but short, and disease frequently results. If the stimulus be deficient, the functions are sluggish, and the man does but vegetate with little animation. Thus different animals will need a diet in which these two qualities are differently tempered. All do not need the same amount of stimulus for their highest perfection.

Animal food is much more stimulating than vegetable food [therefore peculiarly improper for young persons]. If the vegetable have sufficient stimulus for man, all accession of stimulus, whether from flesh meat or from intoxicants, which stimulate without nourishing, must be hurtful. The seeds of disease (as

Hippocrates long ago observed) are sown early, and the effects are long unnoticed, until the slowly-accumulated force explodes suddenly; then some recent indiscretion is blamed by the patient, who rarely suspects how gradually his health has been undermined. Hence so few are willing to admit that stimulating food has caused their sufferings.

It is generally imagined that flesh of animals and fermented liquors enable men to perform greater tasks.\* Undoubtedly men under the influence of a stimulus fancy themselves stronger while they feel their nervous energy excited, and their circulation somewhat quicker; and, without damage to our argument, we might admit that there is a temporary increase of real energy, though bought by inevitable after-weakness. Exhaustion will invariably be in proportion to the degree and duration of the stimulants, whenever they exceed what is normal and natural. Thus the use of too stimulating food generates a desire for the food, just as intoxicating liquors enslave the drinker; for when a sense of exhaustion succeeds to the agreeable sense of inward energy, the person looks to the stimulating food as the most certain relief of his weakness. He feels himself "low," "wanting in tone," when his diet is made less stimulating: thus he imagines "experience" to teach him that he actually *needs* the stimulus. In the case of intoxicants we all see the victim's delusion, and that the goal is weakness and death: yet how few understand that their inward feeling of strength, produced by stimulating food, is no proof that the stimulus is not decidedly baneful!

Experiments show that a meal on animal food, more than a vegetarian meal, quickens the circulation and increases the quantity of oxygen consumed by the lungs. Dr. Craigie infers that the action of the lungs is made more laborious, and that the frame becomes less capable of supporting fatigue. In fact, most persons admit the advantage of vegetable food in pulmonary consumption, because it lessens the task of the lungs.

Moreover, if other things be equal, the vegetarian can last longer without food, and endure protracted fatigue better, than those who subsist mostly on flesh meat: for the more stimulating the food, the greater the waste of organised substance, and the sooner does the demand for food return.

Dr. Clarke teaches that food too exciting may induce "tubercular cachexia" [*i.e.*, an evil state tending to cause tubercles] and scrofula. Dr. Buchan observes: "Consumptions, so common in England, are in part owing to the great use of animal food." To the same cause Dr. Lambe holds that scrofula is often attributable. Abernethy says: "Animal substances are changed into a putrid, abominable, and acrid stimulus;" and Sir Edward Berry states that a man who was induced to try the effect of partridges

[\* Beer, ale, and wine are now renounced by those who have to fight or row for a prize.—ED.]

without vegetables, was obliged to desist after eight days by symptoms of putrefaction. Dr. Alphonsus Lercy, of Paris, in a monograph on certain diseases, establishes the doctrine generally, that many human ailments are an infection derived from the animals eaten. Diseases of the liver are common with flesh eaters. Rich and highly-seasoned flesh meat (says Dr. Copland), with sauces, spice, and wines, especially in hot countries, are a chief cause of liver disease. Hence, in the West Indies it is commoner in our *officers* than in their *troops*. In contrast to this, Sir John Sinclair observes, that vegetable aliment, even when from some cause it disagrees, seldom affects the whole system so as to produce constitutional disorder. It may derange stomach and bowels, but its effects hardly ever appear in the blood vessels. He also says that animal food is *more wasting*, since it excites temporary fever after every meal.

Haller—a first-rate botanist, an eminent physician, and a profound philosopher—says: “This food, then, which I have hitherto described, and in which flesh has no share, is salutary; insomuch that it fully nourishes a man, protracts life to an advanced period, and prevents or cures such disorders as are attributable to the acrimony or grossness of the blood.”\* The celebrated Dr. Hufeland taught that a simple vegetable diet was most conducive to health and long life. Sir William Temple—after noticing the customs and habits of the Patriarchs, the Brachmans, and the Brazilians—says: “From all these examples and customs it may probably be concluded that the common ingredients of health and long life are great temperance, open air, easy labour, little care, simplicity of diet—rather fruits and plants than flesh (which easily corrupts), and water, which preserves the radical moisture, without too much increasing the radical heat. Whereas sickness, decay, and death proceed commonly from the one preying too fast upon the other, and at length wholly extinguishing it.”

Porphyry, when addressing Firmus Castricius, who had relinquished Pythagorean abstinence, says: “You owned, when you lived among us, that a vegetable diet was preferable to animal food, both for preserving health and facilitating the study of philosophy; and now, since you have eaten flesh, your own experience must convince you that what you then confessed was true. The use of flesh does not contribute to health, but rather prevents it; since health is preserved by the same measures by which it is restored: but it is restored by the use of the lightest food, and by abstinence from flesh: and consequently health is preserved by the same means. A quiet state of mind is of the utmost importance to the maintenance of health, and a light and spare diet contributes greatly to the end.”

\* Haller, Elem. Phy. Vol. VI., p. 199.



## CHAPTER IV.

## SUFFICIENCY OF VEGETABLE FOOD FOR MUSCULAR STRENGTH.

No sooner does a person make trial of a vegetable diet, than his friends are alarmed and try to dissuade him. It is imagined that even if it make him less liable to inflammatory diseases, it will expose him to epidemics—keep him “low,” and with “little stamina :” the diet is called “poor.” But all this is unsupported assumption. A wise vegetable diet is *not* a “poor” diet for a man : it does not expose him to malaria, but rather averts it ; or, if he become infected, aids convalescence. If by “stamina” be meant rotundity of body and fulness of blood, such “stamina” constitutes the very food of disease. A person in such a state is not only more liable to febrile and epidemic attacks, but is in much greater danger while labouring under them. How many that are florid in aspect are suddenly cut off. Too much flesh and blood is neither health nor strength. [A horse in highest condition for service shows every muscle sharp and wiry.]

There are, however, many who concede that a vegetable diet may enable a man to live on, somehow, that is, to *vegetate*, in health ; yet they imagine he cannot be active and strong ; they think that butcher’s meat alone has the elements which give muscularity.

That grass and other herbage contains all the materials for the utmost muscular vigour, if only the alimentary organs be adapted to it, is clear from the horse, the elephant, the rhinoceros. That fruits, roots, and grain, equally suffice, is proved by the great strength of the orang-outang and of the gorilla, which is now notorious.

But we need not dwell on the strength of brutes, when we have so many demonstrations from human history on the greatest scale. Whatever may be uncertain in detail in the history of ancient Persia, it cannot be doubted that Cyrus and his conquering soldiers subsisted on vegetable food and water. So indeed do the hardy Persian armies of the present day. The common soldiers are satisfied with thin cakes of bread and powdered cheese, accounting a bunch of raisins, figs, or dates, a luxurious accompaniment. Water is their drink. Animal food is seldom tasted. Pilau, that is, rice dressed with butter and salt, is a favourite dish : it may take as accessories in it various ingredients—eggs, a fowl, or a piece of lamb, with the richer ; but the chief luxury is a profusion of the best fruit. The Persian nation, though very abstemious, is strong and beautiful.

In the most heroic days of the Grecian army, their food was

the plain and simple produce of the soil. The immortal Spartans of Thermopylæ, were (from infancy) nourished by the plainest and coarsest vegetable aliment; and the Roman army, in the period of their greatest valour and most gigantic achievements, subsisted on plain and coarse vegetable food. When the public games of ancient Greece—for the exercise of muscular power and activity in wrestling, boxing, running, &c.—were first instituted, the *athletæ*, in accordance with the common dietetic habits of the people, were trained entirely on vegetable food. “Those who were destined to this profession, frequented, from their tender age, the *Gymnasia* or *Palæstræ*, which were a kind of academies maintained for that purpose at the public expense. In these places such young people were under the direction of different masters, who employed the most effectual methods to inure their bodies for the fatigues of the public games, and to form them for the combats. The regimen they were under was very hard and severe. At first, they had no other nourishment but dried figs, nuts, soft cheese, and a gross heavy sort of bread called ‘*μαζα*.’ They were absolutely forbidden to use wine, and required to observe the strictest continence.”\* “In later times—after animal food had begun to be common among the people, and flesh meat was found to be more stimulating and to render their pugilists and gladiators more ferocious—a portion of flesh was introduced into the diet of the *athletæ*. But, according to the testimony of early Greek writers, it was soon found that the free use of this kind of aliment made them the most sluggish and stupid of men.”†

“It is said that after the Romans became a flesh-eating people the Roman army was equally heroic and victorious; but it should be remembered that, whatever were the practices of the wealthy and luxurious Roman citizens, flesh meat entered but very sparingly into the diet of the Roman soldier till after the days of Roman valour had begun to pass away; and, with equal pace, as the army became less simple and less temperate in their diet, they become less brave and less successful in arms. It should be remembered, also, that after the Romans had become a flesh-eating people, the success of the Roman army did not, as at first, depend on the bodily strength and personal prowess of individual soldiers, but on the aggregate power of well-disciplined legions, and on their skill in systematic war. So far as bodily strength and ability to endure voluntary action are considered, the Roman soldier was far the most powerful and heroic in Rome’s earliest days, when he subsisted on his simple vegetable food.”‡

The same important principles are demonstrated by the facts

\* Rollin’s Ancient History. Vol. I.

† *Athletæ*. Introduction.

‡ Graham’s Lectures. Vol. II., p. 188.

of modern times. "Very few nations in the world," says a sagacious historian, "produce better soldiers than the Russians. They will endure the greatest fatigues and sufferings with patience and calmness." And it is well known that the Russian soldiers are (from childhood) nourished by simple and coarse vegetable food. "The Russian grenadiers," says a letter from the Helder, "are the finest body of men I ever saw : not a man is under six feet high. Their allowance consists of eight pounds of black bread, four pounds of oil, and one pound of salt, per man, for eight days ; and, were you to see them, you would be convinced that they look as well as if they lived on roast beef and English porter."\*

"The Russian peasant," observes Bremner, in his "Excursions in the Interior of Russia," "is satisfied with the plainest food. No people in Europe are so coarsely fed. Their diet consists of the most acrid articles that were ever devised. Pickled cucumbers, pickled cabbages, or pickled mushrooms, with a piece of black bread, are their daily fare." Again he says : "Unless in the very largest towns, butchers' meat would appear to be very little used. Even in such places as Toula and Zarsk, a butcher's shop is never seen ; a calf with the skin half off is sometimes displayed at a butcher's door, but the sight does not occur above once in two hundred miles. Fish is even more rare than beef, being always sold alive from the river : none is ever exposed in the market-places. Vegetables and milk compose a great part of the diet in the districts we have now reached."

"I have made several voyages to St. Petersburg, in Russia," says Captain Cornelius S. Howland, of New Bedford, Mass. "The people of Russia generally subsist (for the most part) on coarse, black rye bread and garlicks. The bread is exceedingly coarse—sometimes containing almost whole grains ; and it is very hard and dry. I have often hired men to labour for me in Russia, which they would do from sixteen to eighteen hours, and 'find themselves,' for eight cents per day (the sun shining there sometimes twenty hours in the day). They would come on board in the morning, with a piece of their black bread weighing about one pound, and a bunch of garlicks as big as one's fist. This was all their nourishment for the day of sixteen or eighteen hours labour. They were astonishingly powerful and active, and endured severe and protracted labour far beyond any of my men. Some of these men were eighty and even ninety years old ; and yet these old men would do more work than any of the middle-aged men belonging to my ship. In handling and stowing away iron, and in stowing away hemp with the jack-screw, they exhibited most astonishing power. They were full of agility, vivacity, and even hilarity ; singing as they laboured, with all the buoyancy and blithesomeness of youth."

\* The *Sun* newspaper for September 25, 1799.



The general food of the Norwegians is rye bread, milk, and cheese. Mr. Twining says: "As a particular luxury, the peasants eat their *sharke*, which are thin slices of meat, sprinkled with salt, and dried in the wind like hung beef; but this indulgence in animal food is very rare indeed. A common treat, on high days and holy days, consists of a thick hasty pudding, or porridge of oatmeal or rye meal, seasoned by two or three pickled herrings or salted mackerel. All the travellers I have consulted, agree in representing the people as thriving on this apparently poor fare; and in no part of the world, in proportion to its population, are there more instances of extreme longevity than in Norway." "Notwithstanding the poor fare of the inhabitants," says Dr. Capell Brooke, "they are remarkably robust and healthy. Though in many parts animal food is quite unknown to them, they are generally tall and good looking, with a manly openness of manner and countenance, which increased, the further north I proceeded. From this hardy way of living, and being daily accustomed to climb the mountains, they may be said to be in a constant state of training; and their activity (in consequence) is so great, that they keep up with ease by the side of your carriage at full speed, for the distance of ten or twelve miles."

"The Polish and Hungarian peasants from the Carpathian Mountains," says a young Polish nobleman, "are among the most active and powerful men in the world; they live almost entirely on oatmeal, bread, and potatoes. The Polish soldiers under Buonaparte," continues he, "would march forty miles in a day, and fight a pitched battle; and the next morning be fresh and vigorous for further duties."

The peasants of some parts of Switzerland, who hardly ever taste anything but bread, cheese, and butter, are vigorous people. "The Bernese," observes M. Raspail, "so active and so strongly formed, live scarcely on anything but maize and fresh water." Those who have penetrated into Spain, have probably witnessed to what a distance a Spanish attendant will accompany on foot a traveller's mule or carriage—not less than forty or fifty miles a day; raw onions and bread being his only fare.

"With respect to the Moorish porters in Spain," says Captain C. F. Chase, of Providence, R. I., "I have witnessed the exceedingly large loads they are in the habit of carrying, and have been struck with astonishment at their muscular powers. Others of the labouring class, particularly those who are in the habit of working on board of ships, and called in that country 'stevedores,' are also very powerful men. I have seen two of these men stow off a full cargo of brandy and wine in casks (after it was hoisted on board and lowered into the hold) apparently with as much ease as two American sailors would stow away a cargo of beef and pork. They brought their food on board with them, which consisted of coarse brown wheat bread and grapes."

“The Greek boatmen,” says the venerable Judge Woodruff, of Connecticut, who went out as the agent of the New York Committee for the relief of the Greeks, “are seen in great numbers about the harbours, seeking employment with their boats. They are exceedingly abstemious. Their food always consists of a small quantity of black bread, made of unbolted rye or wheat meal (generally rye), and a bunch of grapes or raisins, or some figs. They are, nevertheless, astonishingly athletic and powerful, and the most nimble, active, graceful, cheerful, and even merry people in the world. At all hours they are singing—blithesome, jovial, and full of hilarity. The labourers in the ship-yards live in the same simple and abstemious manner, and are equally vigorous, active, and cheerful. They breakfast and dine on a small quantity of their coarse bread, and figs, grapes, or raisins. Their supper, if they take any, is still lighter, though they more frequently take no supper, and eat nothing from dinner to breakfast. It is, indeed, astonishing to an American to see on how small a quantity of food these people subsist. It is my serious opinion that one hearty man in New England ordinarily consumes as much food in a day as a family of six Greeks. Yet there are no people in the world more athletic, active, supple, graceful, and cheerful. In Smyrna, where there are no carts or wheel carriages, the carrying business falls upon the shoulders of the porters, who are seen in great numbers about the wharves and docks, and in the streets near the water-side, where they are employed in lading and unlading vessels. They are stout, robust men, of great muscular strength, and carry at one load, upon a pad fitted to their backs, from four hundred to eight hundred pounds. Mr. Langdon, an American merchant residing there, pointed me to one of them in his service, and assured me that, a short time before, he carried at one load, from his warehouse to the wharf (about twenty-five rods), a box of sugar weighing four hundred pounds, and two sacks of coffee weighing each two hundred pounds, making, in all, eight hundred pounds; that, after walking off a few rods with a quick step, he stopped and requested that another sack of coffee might be added to his load; but Mr. Langdon, apprehending danger from so great an exertion, refused his request.” Lieut. Amasa Paine informs us that one of these porters carried a load weighing nine hundred and sixty pounds. Mr. Luther Jewett (of Portland, Maine) says that one of his schooners came into Portland, laden with barilla, from the Canary Islands, and that he stood by while the schooner was discharging its cargo, and saw four stout American labourers attempt, in vain, to lift one of the masses of barilla, which the captain and mate both solemnly affirmed was brought from the storehouse to the vessel by a single man, a native labourer, where they freighted; and he subsisted entirely on coarse vegetable food and fruit.



Mr. W. Fairbairn, of Manchester, in the "Report on the sanitary condition of the labouring population of Great Britain," says: "I observed, on a late journey to Constantinople, that the boatmen, or rowers of the caiques, who are perhaps the first rowers in the world, drink nothing but water; and they drink that profusely during the hot months of the summer: The boatmen and water-carriers of Constantinople are decidedly, in my opinion, the finest men in Europe, as regards their physical development; and they are all water drinkers; they may take a little sherbet,\* but, in other respects, are what we should call in this country 'teetotallers.' Their diet is chiefly bread; now and then a cucumber, with cherries, figs, dates, mulberries, or other fruits which are abundant there; now and then a little fish. Occasionally, I believe, they eat the flesh of goats; but I never saw them eating any other than the diet I have described. They eat about the same amount as European workmen; or, if anything, are more moderate as respects quantity."

Mr. Buckingham informs us that the inhabitants of the Himalaya mountains, although fed upon nothing but rice, are yet much superior to our sailors in strength. The Japanese not only abstain from animal food, but even from milk and its productions. One of the laws which they most religiously observe is, not to kill or eat anything that is killed.† Their chief food consists of rice, pulse, fruits, roots, and herbs, but mostly rice, which they have in great plenty and perfection, and dress in so many different ways, and give to it such variety of tastes, flavour, and colour, that a stranger would hardly know what he was eating.‡ Hot rice cakes are the standard food, and are kept ready at all the inns, to be presented to the traveller the moment he arrives, along with tea, and occasionally sacki or rice beer. The Japanese are, however, represented as robust, well-made, and active. "I see," says Michaelis, "from Russell's Natural History of Aleppo (page 50), that there the Jews and Turks never taste the flesh of cattle."

The Hindoos are divided into several distinct orders, or classes, which division has existed from the remotest times. "The three higher classes are, by their religion, prohibited entirely the use of flesh meat. The fourth is allowed to eat all kinds except beef, but only the lowest classes are allowed every kind of food without restriction; and it is in these lowest classes that the most miserable, ill-formed, and indolent portion of the native

[\* Mr. Fairbairn seems to imply that sherbet is a spirituous drink. But the word *sherbet* is nothing but the Arabic for *drink*, and practically means only barley water, with some fine vegetable flavour added, especially from citron, or orange, or almonds. Of course brandy *may* be added to it, as to noyau; but this is not the sherbet of the ordinary Turkish drink shops.—ED.]

[†In 1873 our newspapers state, that the Japanese Government has now rescinded the law against flesh meat, in imitation of Europe!—ED.]

‡ Mod. Univer. Hist. Vol. IX., p. 62.



inhabitants of India are found ; while among the higher and more intelligent, temperate, and virtuous classes, which subsist on a pure and wholesome vegetable aliment, men of six feet stature, and with well-proportioned, symmetrical, vigorous, and active bodies, are by no means uncommon ; and for natural ease, grace, and urbanity, this class of Asiatics are exceeded by no people in the world.”\*

“There is a caste of Hindoos,” says Sir John Sinclair, “called (on the western side of India) Pattamars, whose sole occupation is to carry letters and despatches by land, and they perform journeys almost incredible in the time allotted ; as is the small quantity of food they subsist on during their journey. They generally go in pairs, for fear of one being taken ill, and are allowed rewards, in proportion to the expedition with which they perform their journey. From Calcutta to Bombay, I think, twenty-five days are allowed (about sixty-two miles a day) ; from Madras to Bombay, eighteen days ; from Surat to Bombay, three days and a half. They are generally tall, being from five feet ten inches to six feet high. They subsist on a little boiled rice.”

The Chinese also feed almost entirely on rice, confections, and fruits ; and although many of them—from chewing opium, and other pernicious habits, as well as from extreme scarcity of food—are in a state of great wretchedness, yet those who are enabled to live well, and spend a temperate life, are possessed of great strength and agility. “A finer-shaped and more powerful race of men exists nowhere,” says Mr. Davis, “than the coolies or porters of Canton ; and the weight they carry with ease, on a bamboo between two of them, would break down most others. The freedom of their dress gives a development to their limbs, that renders many of the Chinese models for the sculptor.” Gutzlaff says,—on a certain occasion, “not being able to walk, we procured sedan chairs. The bearers appeared to be the lowest of the low—clad in a few rags, and looking as emaciated as if they were going to fall down dead. But under this unseemly exterior they hid great strength. I certainly believe that a well-fed horse would not have been able to carry some of us (who were stout and hale) over the cragged mountains, without sinking under the load. But these men walk on briskly and sure-footed, and ascend acclivities with greater speed than we could have done in walking. Yet, though these men were meagre, and hungry as wolves, they were cheerful and boisterous. Of the scanty livelihood upon which the poorer classes, and indeed nine-tenths of the nation, are obliged to subsist, those who have not witnessed the reality can hardly have an adequate idea. The wages are so low that a man who has worked from morning till evening, as hard as he could, gains perhaps ten cents ; and with this he has to maintain wife and children.”

\* Graham’s Lectures. Vol. II., p. 198.

In Egypt, the diet of the peasantry and labouring people is much the same as in China. They use some animal substance, particularly fish, as a kind of relish or condiment ; but their nourishment is derived from vegetable substances. Their food chiefly consists of coarse bread, made of wheat, of millet, or maize ; together with cucumbers, melons, gourds, onions, leeks, beans, chick-pease, lupins, lentils, dates, &c. Most of these vegetables they eat in a crude state. "It is indeed surprising to observe, how simple and poor is the diet of the Egyptian peasantry, and yet how robust and healthy most of them are, and how severe is the labour which they can undergo. The boatmen of the Nile are mostly strong muscular men. They undergo severe labour in rowing, poling, and towing ; but are very cheerful, and often the most so when most occupied, for then they frequently amuse themselves by singing."\* "The Egyptian cultivators of the soil, who live on coarse wheaten bread, Indian bread, lentils, and other productions of the vegetable kingdom," says Mr. Catherwood, "are among the finest people I have ever seen."

The natives of Central Africa, who subsist wholly on vegetable food, possess astonishing bodily powers. "The people of Jenna," says the enterprising Landers, "have abundance of bullocks, pigs, goats, sheep, and poultry ; but they prefer vegetable food to animal. Their diet, indeed, is what we should term poor and watery, consisting chiefly of preparations of the yam, and of Indian corn ; notwithstanding which, a stronger or more athletic race of people is nowhere to be met with. Burdens with them are invariably carried upon the head ; and it not unfrequently requires the united strength of three men to lift a calabash of goods from the ground to the shoulders of one ; and then, and not till then, does the amazing strength of the African appear. Some of the women that we saw bore burdens on their heads that would tire a mule ; and children not more than five or six years old trudged after them with loads that would give a full-grown person in Europe a brain-fever."

The Kroomen are a particular race of people, differing entirely from the other African tribes. They inhabit a country called "Setta Krow," on the coast near Cape Palmas. Their principal employment is of a maritime nature. A certain number of these men are always employed on board of the ships of war, on the African coast, for the purpose of performing those duties in which considerable fatigue and exposure to the sun are experienced. They only require a little palm oil, and a few yams to eat, and they are always ready to perform any laborious work which may be required of them."†

\* Lane's Egypt.

† Graham's Lectures. Vol. II., p. 205.

“The principal article of food among the Indians of Mexico, and more particularly in the state of Tobasco,” says Mr. Pope, who resided several years among them, “is Indian corn. It consequently constitutes the most important article of agriculture; and three crops may be obtained in a year, without the labour of tillage. From the corn they prepare a thin cake, called the ‘fortilla,’ which is a bread universally used by the better class of the inhabitants; and a dough from which is made into what they call ‘posol.’ The latter article is prepared by boiling the corn, and afterwards crushing it on a flat stone fitted for the purpose, which indeed every family possesses; it being substituted for grinding, as corn-mills are unknown in the country. This dough is laid aside until wanted for use, and in a short time becomes sour, in which condition it is generally preferred. It is then mixed with water to such a consistency as may be drunk; and sometimes a little sugar is added. On this food alone they are enabled to subsist and undergo far more fatigue under the tropical sun of Mexico than our northern labourers in the northern latitudes, with the free use of animal food. I have not unfrequently been forty hours in ascending the Tobasco river, to the capital—a distance of about seventy-five miles—in one of their canoes, against a current of from three to four miles an hour; the men poling the canoe (a very laborious employment) sixteen hours out of the twenty-four. Those who abstain from the use of ardent spirits are muscular and strong, and among them are to be found models for the sculptor.”

Sir Francis Head informs us that immense loads are carried by the South American miners, though fed entirely on grain and pulse.

“The Spaniards of Rio Salada, in South America, who come down from the interior, and are employed in transporting goods overland, live wholly on vegetable food. They are large, very robust, and strong, and bear prodigious burdens on their backs—such as require three or four men to place upon them—in knapsacks made of green hides; and these enormous burdens they will carry fifty miles into the country, travelling over mountains too steep for loaded mules to ascend, and with a speed which few men can equal without any incumbrance.”

“The slaves of Brazil are a very strong and robust class of men, and of temperate habits. Their food consists of rice, fruits, and bread of coarse flour, and from the farrenia root. They endure great hardships, and carry enormous burdens on their heads a distance of from a quarter of a mile to a mile without resting. It is a common thing to see them in droves or companies, moving on at a brisk trot, stimulated by the sound of a bell in the hands of the leader, and each man bearing upon his head a bag of coffee weighing a hundred and eighty pounds, apparently as if it were a light burden. They also carry barrels



of flour, and even barrels of beef and pork, upon their heads. They are seldom known to have a fever, or any other sickness. The Congo slaves of Rio Janeiro subsist on vegetable food, and are among the finest-looking men in the world. They are six feet high, every way well-proportioned, and remarkably athletic. The labourers of Laguirá eat no flesh, and are an uncommonly healthy and hardy race. A single man will take a barrel of beef or pork on his shoulders, and walk with it from the landing to the custom-house, which is situated upon the top of a hill, the ascent of which is too steep for carriages. Their soldiers, likewise, subsist on vegetable food, and are remarkably fine-looking men."\*

An officer of a frigate who had been at the Sandwich Islands has declared that our sailors stood no chance in boxing with the natives, who fight precisely in the English manner. A quartermaster, a very stout man and a skilful boxer, indignant at seeing his companions knocked about with so little ceremony, determined to try a round or two with one of the stoutest of the natives, although strongly dissuaded from the attempt by his officers. The blood of the native islander being warmed by the opposition of a few minutes, he broke through all the guards of his antagonist, seized him by the thigh and shoulder, threw him up, and held him with extended arms over his head for a minute, in token of triumph, and then dashed him on the deck with such violence as to fracture his skull. The gentleman added that he never saw men apparently possessed of such muscular strength. Our stoutest sailors appeared mere shrimps compared with them. Their mode of life—constantly in vigorous action in the open air, and undebilitated by the use of stimulating food or drink—may be considered as a perpetual state of training.†

In 1823, General Valdez (a Peruvian General) led his army from near Lima to the southward of Arequipa—a distance of two hundred and fifty leagues, or seven hundred and fifty miles—in eleven days, or more than sixty-eight miles a day for eleven days in succession; and, at the close of this forced march, met and routed the patriot army, which was much larger than his own. During this march the soldiers subsisted on the parched corn which they took in their pockets. "These Peruvians," says a highly intelligent gentleman, who has spent twenty years among them, "are a more hardy race, and will endure more fatigue and privation than any other people in the world. They subsist wholly on vegetable food, and, being very improvident, their diet is generally coarse and scanty. Parched corn is their principal, and generally their exclusive, article of food, when engaged in any particular enterprise or effort which requires great activity and

\* Graham's Lectures. Vol. II., p. 207.

† Sir John Sinclair's Code of Health and Longevity.

power of body ; at other times they subsist on such of the various products of their climate as they happen to have at hand. In travelling, and in many other respects, the women are quite equal to the men in muscular power and agility."

Examples might be multiplied, from all parts of the world, of people living entirely upon vegetable food, and enjoying perfect health and bodily vigour ; but perhaps none are more striking than those we have in close proximity to us. "The chairmen, porters, and coal-heavers, the strongest men in the British dominions, are said to be (the greater part of them) from the lowest rank of people in Ireland, who are generally fed with the potato. No food can afford a more decisive proof of its nourishing quality, or of its being peculiarly suitable to the health of the human constitution."\* This remark has been amply confirmed by the recent experiments of Professor Forbes on the weight, height, and strength of above eight hundred individuals ; his tables clearly showing that the Irish are more developed than the Scotch at a given age, and the English less. The Rev. Howard Malcolm, of Boston—who has travelled extensively in Europe, Asia, and America—says : "The finest specimens of the human body I ever beheld I saw in Ireland, and they had never tasted animal food." Many English farmers who have been in the habit of employing the natives of the Emerald Isle, bear testimony to the fact that those who are steady, and refrain from spirituous liquors, are indefatigable, and are capable of performing a much greater amount of agricultural labour on their simple meal of potatoes and buttermilk than the English labourer, though feeding on abundance of flesh meat.

The miners in Cornwall are remarkably strong, well made, and laborious : their chief food is potatoes. Douglass, in his description of the east coast of Scotland, says : "The common food of the country people on the east coast of Scotland is oatmeal, milk, and vegetables ; chiefly red cabbage in the winter season, and celerworts for the summer and spring." At ten or twelve miles distance from a town, flesh is never seen in the houses of the common farmers, except at a baptism, a wedding, Christmas, or Shrovetide. Yet they are "strong and active, sleep sound, and live to a good old age." He gives "a farmer's bill of fare for a day," which is curious, and does not contain a particle of animal food. "The usual diet of labourers in the parish of South Taunton, Devonshire, is milk and potatoes, barley or wheaten bread, and occasionally a little bacon." Bread and cheese, potatoes and milk porridge, and a thick flummery, made of coarse oatmeal, are the usual diet of the labouring people in Pembrokeshire."†

\* Smith's Wealth of Nations. Vol. I., p. 222.

† Sir F. M. Eden's "State of the Poor."

Mr. Brindley, a celebrated canal engineer in this country, informs us that in the various works in which he has been engaged—where the workmen, being paid by the piece, each exerted himself to earn as much as possible—men from the north of Lancashire and Yorkshire, who adhered to their customary diet of oatcake and hasty pudding, with water for their drink, sustained more labour and made greater wages than those who lived on bread, cheese, bacon, and beer—the general diet of labourers in the South. I am aware that statements have been made which seem to contradict what Mr. Brindley here affirms to be true. It has been said that Frenchmen, when employed in the forming of canals and railroads, have not been able to compete at all with the English till they have begun to eat animal food and to drink beer. Perhaps the work was at first new to them, and habit, rather than food, might effect the change. It is not denied, however, that a more stimulating diet might excite them to more strenuous exertions; and as they became more accustomed to their work, they would perform it with much greater ease; and although a man on vegetable diet might not accomplish so much in a short space of time as a man living on more exciting food, it is nevertheless certain that, if their constitutional stamina be equal, the former will bear a continuance of labour much longer than the latter, and, by his steady and unremitting exertions, will in the end perform a much greater amount of work.

That animal food, or a mixed diet, is also sufficient to produce great bodily strength and vigour, cannot be denied. The examples already adduced are merely for the purpose of showing that a vegetable diet is not *inconsistent* with these qualities; and abundant evidence yet remains to prove the superiority of a diet of fruit and farinaceous substances over one of animal food. But that the latter diet does not invariably produce strength and vigour we have sufficient evidence in the inhabitants of both North and South latitudes. The Esquimaux and Fuegians, the Laplanders, Samoiedes, Ostiaks, Tungooses, Burats, and Kamshatdales, though living almost exclusively on animal food, are the smallest, weakest, and least brave people of the globe. This part of the subject may be concluded with a few instances of individuals who have either never eaten animal food, or subsequently discontinued its use.

“The yeomanry and labouring poor throughout the greater part of Westmorland and Cumberland live altogether without animal food. Even substantial *statesmen*, as they are there called, who cultivate their own land, do not see a piece of flesh meat at their table for weeks or months together. Their chief diet is potatoes, milk, and oatcakes; wheaten bread being almost as great a rarity as beef or mutton.”\*

\* Ritson on Animal Food.



Judge Woodruff, to whom I have previously alluded, relates an interesting anecdote of a Greek youth (a native of Thessaly), about nineteen years of age, who subsisted on the plainest, simplest, and coarsest vegetable food, mostly in a natural state, and chiefly fruit. "On our passage home from Greece," says he, "we encountered a number of severe gales, in which all the sailors were obliged to exert themselves to the utmost. During these times, our Greek boy, John of Thessaly, displayed the most astonishing agility and muscular power. He would run out on the rigging, and, hanging by one leg, he would handle the sails with a degree of strength which seemed almost supernatural: although the storm was severe, and the sea rough, yet he would often swing so as to describe a considerable part of a circle; and it appeared impossible for any creature to hold fast. I witnessed these exploits with painful dread, expecting every moment to see him shaken from the rigging into the ocean; but he felt perfectly secure, and even loved the sport, and seemed proud to be daring. One day—while we were sailing under a pleasant breeze, and nothing for the hands to do—the men amused themselves in performing various feats; and, among other things, they tried to lift a cannon, which was lying upon the deck. We had among the crew one very large, stout-built, powerful man, a native of Kentucky, who went by the name of 'big Charlie.' He prided himself in his strength; and, after several others had tried in vain to lift the gun, he took hold, and laid out his whole strength, but did not stir it. He changed his position, and tried the second time and the third time, with all his might; but he was not able to move the gun at all. After big Charlie had given up, and all supposed (of course) that it was entirely useless for any one else on board to try, the Greek boy John, who had been idly looking on, came up lazily, and took hold of the gun, and, to the utter amazement of the whole crew, he (with apparent ease) raised it up full two inches from the deck, and laid it down again. The astonished spectators could not believe their own eyes; and, to satisfy them there was no deception about it, he raised it up the second time. This feat appeared so extraordinary to me, that I could not divest myself of a suspicion that there might be some peculiar sleight in it; and—as I had been, in my prime, a pretty stout man—I thought I would try my own hand at it. I accordingly watched my opportunity, when no one was present to witness my attempt, and, taking hold of the gun in the manner the Greek boy had done, I exerted all my strength, but I could no more move it than if it had been riveted to the deck."\*

The celebrated Lord Heathfield, who defended the fortress of Gibraltar with such consummate skill and persevering fortitude, was well known for his hardy habits of military discipline. He

\* Graham's Lectures. Vol. II., p. 214.

neither ate animal food nor drank wine, his constant diet being bread and vegetables, and his drink water; and he never slept more than four hours in the twenty-four. "My health," says Mr. Jackson, a distinguished surgeon in the British army, "has been tried in all ways and climates; and, by the aids of temperance and hard work, I have worn out two armies in two wars, and probably could wear out another before my period of old age arrives. I eat no animal food, drink no wine or malt liquors, nor spirits of any kind. I wear no flannel, and regard neither wind nor rain, heat nor cold, when business is in the way,"

"Thomas Jackson, a labouring man of Nantucket, has never eaten any flesh, though he sometimes eats fish. He informed me, a short time since," says Mr. Wm. Macy, "that he had never been sick, never felt any of the aches and pains of which others complain, and never experienced any painful weariness from labour. He said he could work all day and all night, if necessary, without any considerable sense of fatigue. I have known him go into the field in the morning, and labour through the day, and come in at evening and eat his supper, and go into the oil-mill and work all night, and then go into the field again in the morning, without a moment's sleep, and work all day; and yet, at the close of the second day, he assured me that he felt no oppressive sense of weariness or exhaustion. He observed to me that he had several brothers, all of whom ate flesh freely, and (said he) I am worth the whole of them to endure labour, privation, and exposure. He is uncommonly nimble and active."

"Thomas McGoodin, a labouring man in the Callender Factory, in Providence, is about forty years old (Feb. 1834), small frame, and weighs about 9st. 4lb. From religious considerations he was induced, about 1825, to abandon the use of animal food, and adopt the most simple vegetable diet, and water to drink. After living in this way about seven years, and labouring hard, a competition arose in the beetling department of the factory, in which the ability of the labourers to endure powerful and protracted effort was severely tried. Two stations, requiring precisely the same exertion, were to be occupied for several days in succession. McGoodin took one of these stations, and occupied it through the whole time without flagging in the least, while the other station was successively occupied by three or four of the strongest men in the establishment, all of whom were actually tired out, and obliged to be relieved. The overseer of the department declared that he believed McGoodin would kill every man in the establishment if they were obliged to hold their way with him till he gave out. McGoodin also laboured from one to two hours longer than any other man."

Dr. Joshua Porter says: "One of my neighbours has taken no flesh for more than three years. He is of the ordinary height and sanguine temperament, and usually weighed, when he ate

flesh, 180lbs. After he changed his diet his countenance began to change, and his cheeks fell in ; and his meat-eating friends had serious apprehensions that he would survive but a short time, unless he returned to his former habits. But he persevered, and is now more vigorous and more athletic than any man in the region, or than he himself has ever been before. His muscular strength is very great. A few days since (Oct. 26, 1827) a number of the most athletic young men in our village (North Brookfield) were trying their strength at lifting a cask of lime weighing 500lbs. All failed to do it with the exception of one, who partly raised it from the ground. After they were gone this vegetable-eater, without any difficulty, raised the cask four or five times. He now weighs 165lbs."

Dr. Lambe states that in his case there was an increase of strength, and the pulse became much more full and strong than under the use of animal food. It was also perfectly calm and regular. A correspondent of Dr. Lambe's, who had adopted the vegetable diet in his family, says : "After persisting near four years in the use of a strict vegetable diet and distilled water, I am happy to give my decided testimony in favour of your system. Its effects have been a gradual and important strengthening of the constitution, without any inconvenience or disagreeable symptom. I found the change easy and pleasant, and have never had the least wish to resume the use of animal food. I have always used much exercise ; I have found my power of bearing fatigue increased ; and have never, during the whole time, felt the slightest indisposition." Previously to this gentleman abstaining from animal food his health had always been good ; and he gives similar testimony as to the effects of the diet upon his children—twelve, ten, and five years of age.

All the examples hitherto presented are of the male sex ; but instances are not wanting to show that a diet of vegetable food is equally beneficial in its influence on the health of females ; and to them, generally, it is more essential than to men. Professor Lawrence says : "I was myself acquainted with a lady who, from a kind of whim, began to live on vegetables. She was in good health, and it was not necessary at all for her to give up her ordinary habits of life. She took a fancy, however, to live in this way. She took nothing but distilled water, fruit, and vegetables, without tasting animal substance, except the milk she took in her tea, for several years. I never knew a more active person ; she made nothing of walking ten miles, and could walk (with ease) twenty. She had two children during the time I knew her, and suckled them for about twelve months each, during which time she only took what I have mentioned—vegetables and fruit to eat, and distilled water to drink—taking nothing stronger than tea, or tea mixed with milk ; yet they were fine healthy children."



At Salford, in Lancashire, there is a religious community (under the denomination of Bible Christians) who, from religious motives, abstain from animal food ; and their minister, the Rev. John Booth Strettles, has kindly answered many inquiries which I made respecting the health, &c., of the members of that society. He observes : "As to your first question, respecting the health and strength of those who adopt a vegetable diet, I have had no reason—I have neither seen nor heard of any—to doubt that in strength they are equal, if not superior, to those who live on flesh diet ; while in health, as far as my experience and observation go, they greatly excel them. During the thirty-four years which I and others with me have abstained from flesh meat and intoxicating liquor, I have known no injury to arise from such abstinence, either to young or old." This testimony is worthy of especial notice ; as, in the society to which it refers, there must be members of all ages, of great variety of constitution, and of all occupations.

The general opinion, therefore, that physical strength cannot be maintained on a fruit and farinaceous diet, is undoubtedly wrong, and cannot have been formed from long experience, or from a proper examination of the subject. A few days' trial of a less stimulating diet than usual will certainly induce a person to suppose that it is debilitating ; but if he persevere for a few months upon food judiciously selected, and take proper exercise, he will find no reason to complain of any diminution of his usual vigour.

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## CHAPTER V.

### CLIMATE AND TEMPERATURE.

THE numerous references already made to men living on vegetable productions, in all climates (whether hot or cold), and engaged in all kinds of occupations, and yet enjoying health and strength, may be regarded as a sufficient refutation of the opinion that human diet should vary with the climate in which a man resides. It is true that a diet of animal food will agree much better with a person living in a cold climate, and taking a considerable amount of muscular exercise, than with one residing in a hot climate, and leading an inactive life ; but it is also equally true that a diet of fruit and farinacea is conducive to the highest and most complete development of man physically, mentally, and morally, in cold countries as well as in hot ; and, "all other things being precisely equal, the man who is fully accustomed to a pure vegetable diet can endure severer cold, or bear the same

degree of cold much longer than the man who is fully accustomed to a flesh diet. Reasoning from false notions derived from mere momentary sensation, mankind long clung to the opinion that alcoholic liquor would enable them better to endure both heat and cold ; and, although modern experiments are beginning to set them right concerning alcohol, yet they blindly cherish the idea that flesh meat is better for them in cold regions than vegetable food ; without pausing to consider that, while it actually affords them less real and permanent nourishment, it stimulates them more, and exhausts the vital powers of their organs more rapidly ; and, therefore, in all that it differs in its effects from vegetable food, it approaches more to the character of alcohol.”\*

We have seen that in Norway, Russia, and other cold portions of the globe, the people, who subsist on coarse vegetable food are exceedingly hardy and vigorous ; and it has been stated, by gentlemen who have spent many months in Siberia, that no exiles to that wintry region endure the severities of the climate better than those who have been all their lives accustomed to a simple vegetable diet.

Certain individuals, however, after adopting a vegetable diet, think that they feel more chilly and cold than when on a mixed diet ; others find no alteration in this respect. This difference in the experience of various individuals may probably be thus explained. Vegetable food being less stimulating than the ordinary diet of this country, and less oxygen being requisite for respiration upon the former, in consequence of the liberation of that element from the food during the process of digestion, muscular activity is less required of a person adopting the former diet, and very frequently the habits become more sedentary under it ; though this is by no means a necessary consequence. Hence the various secretions of the body are formed less rapidly ; and, as caloric is developed by all chemical changes, its absolute quantity will vary with the amount of organic transformations that are constantly taking place. Many persons also, when making this change of diet, form at the same time the salutary habit of cold sponging ; and, by thus freeing the pores of the skin from feculent matter, permit a much greater amount of caloric to escape. Active exercise, therefore, should invariably accompany cold ablutions, to restore the equilibrium of temperature.†

But “ the power of generating heat,” as Sir Jno. Ross‡ ascertained from long experience, “ varies exceedingly in different individuals ; and is as much a portion of the original constitution

\* Graham's Lectures. Vol. II., p. 278.

[† Is not this equivalent to an admission that the cold sponging, so indiscriminately urged, is not always a safe practice?—EDITOR.]

‡ Second Voyage in Search of a North-West Passage, p. 123.

as are the muscular or the mental energies." "This at least seems certain, that men of the largest appetites and most perfect digestion produce the most heat; as feeble stomachs, whether dyspeptic (as it is termed), or merely unable to receive much food, are subject to suffer the most from cold; never generating heat enough to resist its impressions."

In answer to an inquiry on this subject respecting the influence of vegetable food on the members of the religious sect called "Bible Christians," the Rev. J. B. Strettles says: "I know not that any have made any change in their dress, in consequence of adopting the change of diet; nor that they have discovered anything like a decrease of heat, arising from that change, to induce them to think it necessary."

In conclusion, I can with truth affirm that, after nine years' trial of an exclusively vegetable diet, I feel no inconvenience from the change of the seasons, though I am more thinly clad than formerly; and my present immunity from coughs and colds, to which I was very subject, may probably be attributed to the joint influence of a natural diet and daily sponging or bathing with cold water.

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## CHAPTER VI.

### TENDENCY OF AZOTISED FOOD TO CERTAIN DISEASES.

SUCH is the elasticity of nature, that when men harass their stomach with injurious matter, the increased action which is forced on various organs enlarges them, so that they become capable of increased duty. But this can take place only within certain limits. Temporary, and at length structural, disarrangements often follow from overfeeding, especially from too much flesh meat.

Drs. Barker and Cheyne, in their historical account of the Irish epidemic, state that the fever was everywhere more fatal to the upper than to the lower classes. Hereupon Dr. W. Davidson reasonably asks, whether any other cause can be assigned, than the fact that the lower classes feed chiefly on potatoes, and have very little animal food.

"Excessive nourishment," observes Mr. Thackrah, "is the general state of Englishmen. We take richer food than our habits require; and thus our vessels are loaded either with blood in excess, or with a fluid but partially assimilated. Hence, probably, our greater danger from disease or accident; the greater blood-letting and evacuations which our maladies\* require;

[\* But we now believe that the bleeding so common in the first half of this century was wholly pernicious. - EDITOR.]



and the higher fever which injuries occasion. In reading the Memoirs of French Surgery, we find numerous instances of patients restored by the efforts of nature, from states which, in similar circumstances, would be fatal to Englishmen.\* "It is to be remarked," says Sir G. Staunton, "that the Chinese recover from all kinds of accidents more rapidly, and with fewer symptoms of any kind of danger than most people in Europe. The constant and quick recovery from considerable and alarming wounds has been observed likewise to take place among the natives of Hindostan. The European surgeons have been surprized at the easy cure of sepoy's in the English service from accidents accounted extremely formidable." Sir George attributes this to their vegetable regimen.

Excessive nourishment is a real and formidable danger. It is from an abnormal production or retention in the system of certain acids and their compounds, with mineral and earthy matters, that many common maladies arise. The more formidable acids are the lactic, the lithic, and the oxalic. When they result from a natural decomposition of the tissues, and the excretory organs do their duty, no inconvenience is occasioned. But when the food contains them in excess, and oversupplies them to the blood, the excretory organs (chiefly the liver, lungs, and kidneys) may be overtaken, and, like many an overworked labourer, sink under the duty. Hence, in northern climates, where large quantities of azotised food are consumed, a frightful catalogue of disease—especially gout, rheumatism, calculi, gravel—which constitute what is called the "*lithic acid*" disposition. Into lithic acid nitrogen enters largely: that is why animal food tends to produce gout and calculi.

Strumous, lithic-acid, and gouty diseases (says Dr. Prout), result from an imperfect assimilation of the albuminous principles of food. Dr. W. B. Carpenter ascribes the rarity of these affections among the lower classes to their eating no superfluity of animal food.

Against the conclusions to which all these facts point, certain chemists and physiologists—in particular, Dr. W. Tyler Smith—on the contrary, maintain that a purely vegetable diet, particularly in childhood, is most injudicious, and tends to produce scrofula. What is Dr. W. Tyler Smith's argument for such an assertion? "Prout and Majendie," says he, "have shown, by reasoning and experiments, that a *mixed diet* of the different kinds of *animal and vegetable* food, is the most conducive to health." The experiments of Majendie have already been commented on (Chap. I., above), and have been shown to warrant no such conclusion. Dr. Prout certainly shows the necessity for a due admixture of the aqueous, saccharine, albuminous, oleaginous, and (perhaps) ligneous *principles* in human food; but these are

\* Lectures on Digestion and Diet., p. 84.

found mixed already in fruits, grain, and roots, and the error is to extract and separate them. Dr. Prout does not show the necessity of mixing animal and vegetable substance for human food; nor can this be shown from anatomy, chemistry, or physiology.

The phrase "low diet," applied as equivalent to vegetable diet, is misleading. It ought to mean *inferior* food, whether animal or vegetable. The children of the rich often suffer from too concentrated a diet, such as the finest wheaten-flour or arrowroot; but this does not denote that they need flesh meat: that also is too concentrated. The poor, as the rich, err in seeking fine flour, and it is quite possible that this is often hurtful to their children: but in the adult poor it must be mixed with so much that is innutritious as to obviate evil consequences.

If Dr. Tyler Smith's views were correct, then among the Hindoos, the Irish, the Scotch, and many other races who seldom or never eat flesh, scrofula would exceedingly prevail, which is notoriously contrary to fact. In overfed children "it almost seems as if scrofulous sores were set up as a means of consuming the superfluous material which has been introduced into the body." The last remark is from Dr. Tyler Smith himself, and accords with Dr. Prout. There can be no doubt of its correctness. But it is in no harmony with his doctrine that vegetable diet causes scrofula. When he attests the prevalence of scrofula among the boys of Christ's Hospital, who (says he) have a supply of animal food good in quantity and quality, but with a deficiency of fresh vegetables, the argument makes against him. It proves the tendency of abundant *animal* diet to make children scrofulous. As for the poor, their diseases (so far as diet is concerned) arise, not solely from the diet being animal or vegetable, but from its being bad of its kind. Worst perhaps of all is the offal of butchers' meat and *flesh of diseased animals*.

Liebig has objected to the doctrine here maintained, that carnivorous animals in their wild state are never found to have gravel or calculus, nor have those rude nations which live entirely on flesh. But neither are herbivorous animals liable to gout and stone when wild. Each class lives upon substances suited to its organs, and is not tempted to excess by artificial cookery. On the contrary, man indulges in a vast variety of food, prepared rather to gratify his palate than to satisfy a healthy appetite; and, instead of working off its effects by exercise, too often increases the evil by sloth.

The Pampas Indians of Buenos Ayres live almost entirely on mare's flesh and water; yet they too are free from gouty diseases, because, when not asleep, they are generally on horseback. The mare's flesh is so tough and lean that they eat only to satisfy hunger. When they accidentally get a buffalo and indulge in eating its fat, it makes them feverish; but they

recover by fasting a day or two. By the simplicity of their diet, with life in the open air and constant riding, they have health and endurance in spite of their peculiar food, and many of them are very athletic.

Liebig further contends, that animal food is *good* for a constitution suffering under an excess of lithic acid ; and Dr. Bence Jones builds upon the doctrine. The argument and the reply to it require too much of chemical and physiological knowledge for general readers. But a sufficient popular refutation is in the following : That high feeding and animal food tend to gout, and that to feed sparingly and take much exercise keep down the tendency, is the verdict of experience. "Who," says Dr. Graves, "ever heard of a case of gout among the potato-eating peasantry of Ireland?" "And who," observes a writer in the *British and Foreign Medical Review*,\* "ever heard of one among the oatmeal-feeders of Scotland, or the rice-feeding Hindoos—low as is their oxygenation, in consequence of the warmth of the surrounding medium. Every practitioner must have met with examples, in which quite a moderate reduction in the quantity of animal food has caused an immediate disappearance of the lithic acid from the urine. Sometimes it is necessary to push this reduction to a greater extent : thus, we have known an instance in which no decided benefit was obtained until the patient was restricted to the Hindoo diet of rice and capsicums, which produced a complete cure. Upon Dr. Bence Jones's principles, this ought to have produced the most serious aggravation ; for the diet which he recommends is one from which starch and other non-azotised substances are almost completely excluded." †

It is possible, however, that the *sudden* adoption of a purely vegetable diet, by one who has been accustomed to live luxuriously, might prove injurious, and even increase the amount of lithic acid : for, if the digestive powers have been enfeebled by a long course of indulgence, an immediate return to a diet of fruits and vegetable matters might cause an increased secretion of oxalic acid ; which, acting on the urate of ammonia, might deposit the lithic acid ; but, if cautiously adopted, a diet of farinacea and fruit will in all cases be of considerable service ; and persons who have lived moderately on a mixed diet may in most cases make an immediate change without any apprehension of ill consequences.

Dr. Cragie observes : "Diet consisting of bread and milk, or rice and milk, or the flour of farinaceous seeds and milk, is quite adequate to prevent the gouty diathesis [*i.e.*, disposition] and to extinguish that diathesis if already formed. Such diet is also adequate to prevent the disease from appearing in its irregular

\* No. xxx., April, 1823.

† See Appendix B at the end.



form, and affecting the brain and its membranes, and the heart or lungs. If further arguments were required in proof of the position that milk and grain-diet (not in large quantity), or diet of boiled vegetables and milk—while both necessary and adequate to the cure of gout—is perfectly safe, and much less injurious than diet of animal food, they may be found in the facts observed in the physiological relation between the stomach on the one hand and the lungs on the other.\* Dr. Cullen entertains the same opinion of vegetable diet: "I am firmly persuaded that any man who, early in life, will enter upon the constant practice of bodily labour and of abstinence from animal food, will be preserved entirely from gout." With respect to rheumatism, he observes: "The cure requires, in the first place, an antiphlogistic regimen, and particularly a total abstinence from animal food, and from all fermented and spirituous liquors." Dr. Cheyne informs us that the Prince of Condé, after having long suffered from, and being quite overcome by, the gout, was advised by his physicians, for the relief of his pain, to enter upon a *vegetable diet*, and a total abstinence from fish, flesh, and wine. It succeeded accordingly—his pains were relieved, and the gout was overcome.

One of the most remarkable cases of the beneficial effects of vegetable diet in gout is that of Mr. Thomas Wood, of Billericay, in Essex, recorded by Sir George Baker, in the "Transactions of the Royal College of Physicians." This person, from living freely on large quantities of fat meat, with butter, cheese, ale, &c., became exceedingly corpulent, and began, in his fortieth year, to suffer severely from heartburn, sickness, head-ache, violent rheumatism, and frequent attacks of gout; he also had two epileptic fits. These symptoms continued, increasing in severity, during a space of nearly five years; when, in consequence of reading the work of Cornaro on health, he first diminished the quantity of animal food, and finally discontinued the use both of it and ale—living entirely on boiled pudding and sea-biscuit, which he partook of only twice in twenty-four hours. Under this regimen, Mr. Wood not only got rid of the rheumatic pains and gout, but became strong, vigorous, and agile. He was able to carry five hundred pounds weight, which was more than he could lift when he ate animal food and drank freely of ale. He enjoyed good health till his sixty-fourth year, when he died from inflammation, brought on by exposure to cold. Had his diet been regulated by more correct principles, and had other physiological laws been observed, it is probable he would have escaped the illness that caused his death, and have lived to extreme old age.

\* Elements of the Practice of Physic. Vol. II., p. 633.

## CHAPTER VII.

## EFFECTS OF FLESH MEAT ON THE HUMAN TEETH.

IN the present flesh-eating age of Great Britain, perhaps no complaint is more general than caries of the teeth; and, as animal food is a frequent cause of indigestion, it thus conduces to the decay of those useful portions of the human fabric. But there is a more direct mode by which animal food produces this effect. Bell, Fox, and other writers, attribute the decay of the teeth to inflammation, situated either in the lining membrane or the proper bone of the teeth; but Mr. Robertson (a late author) proves—by a number of considerations drawn from the structure, physiology, and development of the teeth, and from operations performed on them—that caries is the result of chemical action of decomposed food upon the teeth, and not the result of inflammatory action.

Upon examination it will be found that there are fissures formed in the enamel of the teeth, in consequence of the irregular distribution of that substance upon the surface; also, that there are interstices, produced by the crowded position of the teeth, and irregularity of their shape; and—as the fibres of animal food retained between the teeth undergo a process of decomposition (by the action of oxygen)—they acquire the property of corroding, disuniting, and thereby destroying the earthy and animal substances of which the teeth are composed. At first, there is formed but a very small hole, which is increased by the daily action of the same causes; the phosphate of lime is gradually disintegrated by the carbonic acid, aided by the secretions of the mouth, until, at length, the nerve becomes exposed, and toothache is the result. Vegetable food is not so liable to be detained between the teeth; but when this does occur, it is not so injurious, because the starch of which this food principally consists is much more easily acted on by the saliva, and converted into gum or sugar—one of the nutrient principles. The popular notion that sugar injures the teeth is incorrect, except in cases where, by its admixture with other substances, it causes indigestion. “It has been alleged,” says Dr. Wright, “that the eating of sugar spoils the colour of and corrupts the teeth. This, however, proves to be a mistake; for no people on the earth have finer teeth than the negroes in Jamaica.”\* It has been previously shown that the teeth of the carnivora are formed for tearing, and not for masticating, and stand like the teeth of a saw; by which means the particles of flesh, which so readily putrify, have no chance of lodging

\* Dr. Wright's “Medical Plants of Jamaica.”

between them ; and, consequently, they are less subject to decay than those of man when he feeds on flesh, as they are formed for a different action, and for different food.

Animal food, however, is not the only article which induces premature decay of the teeth, for "whatever causes a general disturbance of function, and a morbid irritability of the nervous system, assails the teeth in common with all the other organs ; but they will react against such causes with more or less vigour, according as the performance of their function and other circumstances are more or less favourable to their health. If the food is soft and hot, or concentrated, or high-seasoned, or otherwise vicious, and mastication is neglected, incrustations of tartar will gather around the neck of the teeth, inflame the gums, separate them from the enamel, and irritate the membrane which surrounds the roots ; thus bringing on premature decay."\* The teeth being products of the epidermis, their healthy condition is as much influenced by that of the mucous membrane of the alimentary canal as the cuticle and hair are by the condition of the cutaneous organs ; consequently indigestion, from whatever cause, must have an injurious influence on the teeth.

When we discover the remains of the inhabitants of our own country that were interred two or three hundred years ago, when animal food was little used except by the wealthy, and when a greater simplicity of diet prevailed, we generally find the teeth still in a good state of preservation. Sir John Sinclair says : "There is no particular, in respect of which former generations seem to have enjoyed a greater superiority over the present, than with regard to the duration of their teeth. A place of interment was lately opened at Scone, near Perth (in Scotland), which had remained untouched for above 200 years, and yet, to the astonishment of every one, among a great number of skeletons (which were there discovered), there was hardly any of them whose teeth were not entire and sound. This must be ascribed to greater simplicity of diet, to the teeth being less injured by fumes from a disordered stomach, to the custom of drinking hot liquors being then unusual, and perhaps to the absence of scorbutic complaints." It was remarked, also, that several skeletons recently discovered whilst making alterations in the ground near Old Malton Abbey, had the teeth quite perfect, and free from all symptoms of caries, although the persons to whom they belonged had evidently lived much beyond the meridian of life.

An intelligent sea-captain, who had visited most parts of our globe, informed Mr. Graham that he found those people who used hot liquors and hot food, and smoked tobacco and other narcotic substances, always had black and much decayed teeth ; but that in the islands of the Pacific and other parts, where the

\* Graham's Lectures. Vol. I., p. 521.



people seldom or never take anything hot into their mouths, use little or no animal food, and are very simple, plain, and natural in their diet, they had very regular teeth—white, clean, and free from decay. In Mexico the higher classes consume great quantities of animal food—generally eating it three times a day; and they are noted for the early decay of their teeth and for nervous complaints; whereas the Indians residing in the same locality, but who live on vegetable produce, are remarkable for their fine white teeth, for their mild expression of countenance, and for their general good health.\* “A medical gentleman,” says Graham, “who formerly spent fifteen years in one of the remote counties of the state of Maine—where the principal business carried on was that of getting out lumber, and where the inhabitants, with active and industrious habits, knew nothing of luxury, but subsisted on a plain, simple, and coarse diet—stated that the people were very remarkable for their fine, white, and regular teeth, which were wholly free from decay; and that, although he was the only surgeon in the whole county, he had occasion to extract but one tooth in the whole fifteen years; and he finally left the part, because he found no professional business to attend to.”†

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## CHAPTER VIII.

### BENEFICIAL EFFECTS OF VEGETABLE FOOD ON INVALIDS.

REPORTS are often widely circulated, and widely believed, about persons who had adopted a vegetarian regimen, and so reduced their strength by it that there was no power of recovery. Dr. Milo L. North, a distinguished practitioner of medicine in Hartford, Connecticut, resolved in consequence to inquire of his professional brethren into the effects of this diet, which is very common in America. By a circular in the *Boston Medical and Surgical Journal* he requested their communications. His queries were inserted in the *Philadelphian Journal of Medical Science*, and were copied into many papers. In a few months he received numerous replies. Not a single case was mentioned of anyone having fallen a “victim” to vegetable diet; but an almost unanimous statement that a change from an ordinary mixed diet to one severely vegetarian, with only water or milk for beverage, was beneficial to health and strength of body and mind. In thirty to forty cases reported by medical men not a fact is mentioned to prove harm from vegetable food, and in

\* See “Life in Mexico,” by Madame C— de la B—.

† Lectures on the Science of Human Life. Vol. I., p. 518.

nearly every case much good is attested—increased activity, strength, and enjoyment.

A few specimens shall be given of the replies sent to Dr. North. Dr. Parmly, a dentist of New York, states that he adopted a strict regimen two years before, in company with several friends (male and female) who had suffered indigestion or some other chronic malady. In every instance known to him the symptoms of disease had disappeared. He attributed the result neither to the abandonment of flesh meat singly, nor to the abandonment of intoxicating drink singly, but to the joint influence of abandoning both stimulants. An increase of flesh soon followed from the less stimulating food, with animal spirits more buoyant, and greater vigour for exertion, corporal and intellectual. Dr. Parmly did not use even tea or coffee, but only milk and water; no condiment but common salt; eggs, with milk, were his only animal food.

Dr. Joshua Porter, of North Brookfield, had suffered indigestion for nearly two years, with severe colic and cramps. The prescriptions of eminent physicians brought him only partial relief; but, by living for a short time on milk, coarse rye, and maize bread, as his only food, he completely recovered, and attained much increase of muscular strength.

Dr. N. J. Knight, of Truro, had laboured three years under aggravated indigestion, upon which came severe rheumatism and vomiting after meals. He betook himself at last to a strictly farinaceous diet, with milk, ripe fruit, and occasionally a little butter, without remitting hard study and a laborious practice. He was rewarded by an entire recovery and an increase of mental energy. He afterwards tried several times to return to a diet of animal food, but was arrested by evil symptoms. He sums up: "I am now satisfied that mankind would live longer, and enjoy more perfectly the sane mind in a sound body, should they never taste flesh meat or fish."

Dr. Abercrombie mentions the case of a young gentleman who was a "martyr" to stomach complaints, and *could not taste a bit of vegetable without suffering severely*. Symptoms which threatened apoplexy followed, with such a tendency to recur, that at length he was restricted to a sparing diet—*on vegetables*. "Under this regimen," says Dr. Abercrombie, "he has continued free from the complaints in his head, and has never been known to complain of his stomach."

Mr. C. T. Thackrah, of Leeds, like Professor Lawrence, con-founds a fruit and farinaceous diet—the diet on *fruges*—with a diet on *herbs*: a mark that he had not studied this subject closely. He is evidently a warm advocate of flesh meat, by his\* comments on the following two cases which he reports: A Mr. W—,

\* Mr. Thackrah informs us that each of these patients *afterwards* "judiciously" added flesh-meat to his dinner of herbs; but he does not state the reason.

suffering long under bilious disorders, and getting little relief from medical treatment, tried a strict regimen of vegetables and water. His health and spirits greatly improved under it, and he became a warm advocate of this diet. Again: a gentleman who had been under Mr. Thackrah's care for a chronic disease was induced, soon after his recovery, to try the vegetable system. After its use for some months it removed from his head a sense of oppression which had been constant, his general comfort was increased, and his strength by no means reduced.

Dr. Lambe, in his 80th year, ascribes "the good share of health" which he had enjoyed, in spite of early weakness of constitution, to the use of distilled water and abstinence from animal food. He betook himself to the latter at the age of 38, when still in very unsatisfactory health, and was fully convinced that the regimen was most beneficial. Indeed, it instantly relieved severe discomforts which seem never to have been wholly removed.

It is here in place to give my own testimony. About nine years ago I also suffered very much from dyspepsia, and was treated *secundum artem* by my medical adviser, who was eminent in his profession; but I derived little benefit from either the diet or medicine which was prescribed for me. I adopted a vegetable diet, not as a remedy for my complaint, but for the reasons already mentioned (Preface); and, after using this regimen for a very short period, I no longer suffered from a disease that had formerly been a daily and severe drawback upon the pleasures of existence. Like the patients mentioned by Mr. Thackrah, I have often resumed my flesh-eating habits, partly for the sake of experiment, and partly with a view of complying with the general usages of society, and to avoid singularity; but, after a short time, I have always had cause to repent the change, from the inconvenience and pain which were the consequence. I have now sufficiently tested the diet practically, and hesitate not to say that, since I have totally abstained from animal food I have possessed more health and strength of body, more peace and serenity of mind, as well as more intellectual enjoyment, than at any former period of life; and I trust that I shall never more be induced to depart from that simple mode of living which, while it has conferred on me the inappreciable advantages just mentioned, also yields more exquisite gratification of sense than I ever experienced from the most richly-flavoured dishes of a former period.

TREATMENT OF CONSUMPTION.—Dr. P. Buchan remarks that a regimen of farinacea, with fruit and milk, often subdues the early attacks of this disease. He adds: "Where there is a tendency to consumption in the young, it should be counteracted by strictly adhering to a diet of the farinacea and ripe fruits. Animal food and fermented liquors ought to be rigidly prohibited: *even milk often proves too nutritious.*"



Dr. Caleb Bannister, in whose family pulmonary disease was hereditary, states that he had himself painful premonitory symptoms at the age of 20, which were aggravated by ague and fever. His life being despaired of, he was induced to try a milk diet, and succeeded in regaining health. He attests, 24 years later, that he had had no relapse.

Dr. Lambe regards it as indisputable that, for consumptive symptoms, a diet on vegetables, at least with milk only added, is the most proper.

SCROFULA.—Dr. N. J. Knight, of Truro, cured a lady of a most dangerous scrofulous ulcer in her left breast, by prescribing a diet of bread, milk, water, and fruit. She was well in three months, with general health much improved. She could not afterwards taste flesh meat without a twinging in her breast.

Dr. Pemberton recommends, for a child born of scrofulous parents, a diet of milk and farinacea in its second year. He found that three years of such diet postponed, if they could not prevent, scrofulous appearances.

Dr. Buchan says that the most obstinate scurvy often yields to a vegetable diet, and is more benefited by milk than by any medicine. Sir Gilbert Blane (1781) attests that raw potatoes, sliced in vinegar, are beneficial in scurvy. Lieut. James Grant (1803) mentions that American sailors had discovered *raw* potatoes to be a powerful antidote to this malady, insomuch that the whaling ships carry potatoes with them to be eaten raw. More recently Julien Fontanelle confirms this in principle: the French sailors shielded themselves from the attacks of scurvy by potatoes slightly baked under the ashes, and eaten without salt. But there are so many other testimonies to this, that we may treat it as received. Dr. Baly's representations in 1840 led to the addition (in 1842) of 2lbs. of potatoes a-week to the military prisoners at Millbank, as an antidote to scurvy.

Dr. Cheyne, a Dublin physician, celebrated 50 and 40 years ago, lived freely, and became so enormously stout, that he weighed 32 stone, and was obliged to have the whole side of his chariot open to receive him. He became short-breathed, lethargic, nervous, and *scorbutic*. He tried medicine in vain, but was cured by a vegetable and milk diet. It is said that upon this diet he reduced his weight to 10 stone!

EPILEPSY.—A physician, in answer to Dr. Milo North (see p. 74) states that, after being subject to severe epilepsy, he had abstained entirely from flesh, fish, and fowl, for two years and a-half, and continued free from any attack. Dr. Taylor (whose case is related by Dr. Cheyne) had been long dreadfully afflicted by epileptic fits. When medicine and medical counsel wholly failed, he followed the advice which he had read in Dr. Sydenham's works, and gave up, first, all alcoholic liquors, next, all animal food except cow's milk. The fits became less frequent

and less violent upon his abandoning intoxicants, and wholly disappeared under vegetarianism. In a year or two he was perfectly cured, and for 17 years more enjoyed perfect health. Though advanced in years, he assured Dr. Cheyne that he was an unwearied cricketer, and clearer in his faculties than ever. He also said he had cured many persons of inveterate distempers by the same diet.

**APOPLEXY AND PALSY.**—Adam Ferguson, Professor of Moral Philosophy, was seized (when above fifty years of age) with apoplexy and palsy. Dr. Black, the discoverer of latent heat—no vegetarian—prescribed for him a vegetable and milk diet. For nearly forty years he tasted no meat, drank nothing but water and a little weak tea, and took no suppers. When he was about seventy years of age all his paralytic symptoms had disappeared, and his health was so excellent, for a person of his years, as to excite universal admiration. This continued till he was nearly ninety. His mind, up to this time, was almost as entire as in his younger days; none of his bodily functions, except his sight, were much impaired. So perfect indeed was the condition of his physical frame, that nobody unacquainted with his history would have supposed that he had ever been apoplectic or paralytic. He died at the age of ninety-three.—Dr. Cranstown, after suffering greatly (for four or five years) from chronic dysentery, was cured completely by milk and farinaceous diet.

**ULCERS, &c.**—Dr. Joshua Porter, of North Brookfield, tells a case of a man suffering under chronic inflammation in the right leg, with ulcers on the thigh, for seven months. The patient is described as “a flesh-eater for more than half-a-century.” The physician concluded that the local remedies which had been used were nugatory, as the malady was constitutional. After the use of aperients the patient was put on a vegetable diet, and in three days gained astonishing relief. In three days more he was working in his garden. “He is now (writes Dr. Porter)—two weeks since my first prescription—almost well.”

A still more remarkable case is narrated by Mr. S. Rowbotham, surgeon, of Stockport, in the *Lancet* for May 14th, 1842. A little boy, three years old, son of a Mr. Fielding, had been covered with ulcers for eighteen months. For more than twelve months he had been quite blind. The whole description is most painful. Eight eminent medical men had pronounced him incurable. But Mr. Rowbotham dieted him on ripe fruits and honey, or sugar and treacle for honey. The child commenced this diet on September 13th, 1841—stewed fruits, or else grapes, cherries, plums, apples, pears. On the 16th the sores on his back were beginning to disappear, and improvement went on steadily until his perfect recovery on January 1st, 1842. His eyesight had gradually been restored, and his features (which had been indistinguishable) resumed their natural aspect. It is not stated that any medicine was used.

## CHAPTER IX.

## VEGETABLE DIET PROTECTIVE AGAINST EPIDEMICS.

FROM Volney's Travels we learn that "the Wallachians are in general tall, well-built, robust, and of a very wholesome complexion. Diseases are very rare among them; and the plague, though so frequent in Turkey, has never been known, excepting in times of war, when this disease is brought among them by the troops who come from Asia. The manners of the Wallachians, as far as I have been able to judge of them, are simple, and neither embellished nor sullied by art. Temperate in their repasts, they prefer vegetables to fruits, and fruits to the most delicate meats." Timoni, in his account of the plague at Constantinople, relates that the Armenians, who chiefly live on vegetables, are far less liable to the disease than the natives of that city.\*

Sir William Temple, in his "Essay on Learning," † says of the Brahmins: "Their moral philosophy consisted chiefly in preventing all diseases or distempers of the body, from which they esteemed the perturbation of mind, in a great measure, to arise: then in composing the mind, and exempting it from all anxious cares; esteeming the troublesome and solicitous thoughts about past and future to be like so many dreams, and no more to be regarded. They despised both life and death, pleasure and pain; or, at least, thought them perfectly indifferent. Their justice was exact and exemplary; their temperance so great, that they lived upon rice and herbs, and upon nothing that had sensitive life. If they fell sick, they counted it such a mark of intemperance, that they would frequently die out of shame and sullenness; but many lived a hundred and fifty, and some two hundred years."‡

In the first missionary voyage to the South-Sea Islands, we are told that, "until the Europeans visited the Otaheitans, they had few disorders among them. Their temperate and regular mode of life, the great use of vegetables, little animal food, and absence of all noxious distilled spirits and wines, preserved them in health." The case at present is wofully different.

It has been observed that the labouring negroes of the West India Islands are almost wholly exempt from the scourge of the yellow fever, which has cut off such numbers of the other classes of the residents. Upon this observation it was proposed, when the same disease invaded Philadelphia, and was thought contagious, to employ negroes to attend the sick; but there it was

\* Clutterbuck on Fever. † Works. Vol. II., p. 149.

[‡ See below, p. 91, the paragraph on "the extreme age of man."—Ed.]



found that negroes were among those who were the most subject to the disease. Whence this contrariety? The physician on whose authority I am resting ascribed it to the high-feeding\* of the negroes in Philadelphia, which equals that of the whites. But in the West India Islands the reverse is notoriously the case.

Humboldt says the Mexican Indians escape the goitre even in districts where it is prevalent. It is probable that their exemption from bronchocele is due to their subsisting on vegetables; on which account there will be less occasion for their drinking the water of the country, upon which the disease is supposed to depend.

The late Dr. Alderson, of Hull, sent the following statement to Mr. Thackrah: "A friend has, for a long series of years, uniformly continued a plan of water-drinking and a vegetable diet, which he adopted on mature reflection, being fully convinced that the contrary mode was mere luxury and indulgence. His children are living evidences of the good effects of such a plan: there cannot be a handsomer, stronger, or a better family: they possess every physical power in perfection—being tall, comely, finely-proportioned, patient of fatigue, capable of the greatest exertions, and excelling in every gymnastic exercise, without ever having tasted animal food or fermented liquors. They have very seldom even required the aid of medical men; they fear not the effects of the common epidemics; nor have they ever suffered from acquired diseases." †

The Rev. J. B. Stretches, from whose letter I have previously given an extract, further says: "As far as my experience with respect to the members of our society goes, they are far less subject to the periodically prevailing epidemics; and, during the late destructive cholera and influenza, none of them were at all affected by them."

The following cases are quoted from Sylvester Graham's "Lectures on Human Life":—

Howard, the celebrated philanthropist, was probably more exposed to the influence of pestilential causes than any other human being that ever lived. "In the period of sixteen or seventeen years," says his biographer, "he travelled between fifty and sixty thousand miles for the sole purpose of relieving the distresses of the most wretched of the human race. The fatigues, the dangers, the privations he underwent or encountered for the good of others, were such as no one else was ever exposed to in such a cause, and such as few could have endured. He often travelled several nights and days in succession without

[\* Others ascribe yellow fever to bad air, as in stifling bedrooms or barracks, such as afflict every newly-arrived regiment which is full in numbers. Negroes in large towns, especially in hotels, are often huddled into closets, or mere holes, for sleep.—ED.]

† Thackrah's Lectures on Digestion and Diet., p. 102.

stopping, over roads almost impassable, in weather the most inclement, with accommodations the meanest and most wretched. Summer and winter, heat and cold, rain and snow, in all their extremes, failed alike to stay him for a moment in his course ; while plague, and pestilence, and famine, instead of being evils that he shunned, were those with which he was most familiar ; and to many of their horrors he voluntarily exposed himself—visiting the foulest dungeons filled with malignant infection ; spending forty days in a filthy and infected lazaretto ; plunging into military encampments, where the plague was committing its most horrid ravages ; and visiting where none of his conductors dared to accompany him.” Through all this he subsisted entirely on a most rigidly abstemious vegetable diet, carefully avoiding the use of wine and all other alcoholic drinks ; and, such was the result of this man’s experience and observation, that he earnestly advised others who were exposed to the plague to abstain entirely from the use of animal food. This it cannot be supposed he would have done had he not been fully confident of the correctness of such advice, both from what he had experienced in himself, and from what he had seen in others. And it must be remembered that Howard’s opportunity to test the correctness of this opinion was neither brief nor limited, but the most extensive, varied, and long-during, ever experienced by any one man ; and, such were the accuracy of his observations, and the soundness of his judgment, that, although not himself a physician, he was more successful in treating the plague than any of the physicians where he went. Howard’s opinion on such a subject is therefore of the highest value. “The abstemious diet which at an early period of his life he adopted from a regard to his health,” says his biographer, “he afterwards continued, and increased in its rigour from principle and from choice, as well as from a conviction of the great advantages which he derived from it.” And, after all his experience, near the close of his life he made the following record in his diary : “I am fully persuaded, as to the health of our bodies, that herbs and fruits will sustain nature in every respect far beyond the best flesh.”

The distinguished botanist Charles Whitlaw, speaking of the ravages of the yellow fever in New York, says : “I was then in full vigour of health, having been brought up on a vegetable diet, which, I have no doubt, was the chief cause of preserving my health and life ; as I attended and nursed a considerable number during the whole of their illness, without taking the fever. Being anxious to know the cause of the dreadful malady, I attended the dissections. The doctors were astonished how I escaped the contagion. Mr. Hardy, a Scotch philanthropist, like Howard, went from place to place in the city, administering comforts to the diseased and miserable. I was induced to follow his course. It would be impossible to describe the distress I witnessed.”

Mr. Whitlaw also informed Mr. Graham that he spent a season in New Orleans during the prevalence of the yellow fever, and was much among the sick, nursing and administering to them ; and, by virtue of a pure vegetable diet, he wholly escaped an attack of fever.

Dr. Copeland says : “ When travelling in the most unhealthy parts of intertropical Africa, in 1817, I met with an Englishman, who had lived there between thirty and forty years, and was then in the enjoyment of good health. The circumstance was singular ; and, in answer to my inquiries as to his habits, he informed me that, soon after his removal to that pestilential climate, his health had continued to suffer, till, after trying various methods without benefit, he had pursued, as closely as possible, the modes of life of the natives, adopting both their diet and beverages (rice, maize, and water) ; and from that time he had experienced no serious illness.”

The Rev. Mr. Mylne, missionary to Africa, makes the following mention of the health of his colleague, the Rev. Mr. Crocker. Having given an account of his own severe sickness and recovery, he adds : “ Brother Crocker has been very much favoured. He has had no real attack of fever all this time, which, I suppose, is unprecedented for a white man here ; but he began, three months before leaving America, to live on farinaceous food, and has strictly adhered to his principles since he arrived, living on rice, cassada, sweet potatoes, &c.—a fact worthy of the consideration of emigrants to this country.” Mr. G. W. M’Elroy, of Kentucky, visited Liberia (in Africa) in the summer of 1835, arriving in July. He spent two months in Monrovia, and two months on the coast. During his voyage to Africa, while there, and on his passage home, he abstained wholly from animal food, living on rice and other farinaceous vegetables, and on fruits. He enjoyed the best of health the whole time (although much exposed while in Africa) ; and, in fifty-seven days, he gained fifteen pounds in weight.

“ But the most signal demonstrations of the truth of the principles which I am contending for,” says Mr. Graham, “ were afforded in the city of New York, during the prevalence of the cholera, in the summer of 1832. The opinion had been imported from Europe, and generally received in our country, that a *generous* diet, embracing a large proportion of flesh meat, flesh soups, &c., with a little good wine, and a strict abstinence from most fruits and vegetables, were the very best means to escape an attack of that terrible disease. Nearly four months before the cholera appeared in New York I gave a public lecture on the above subject in that city, in which I contended that an entire abstinence from flesh meat and flesh soups, and from all alcoholic and narcotic liquors and substances, and from every kind of purely stimulating substances, and the observance of a



correct general regimen in regard to sleeping, bathing, clothing, exercise, &c., would constitute the surest means by which anyone could rationally hope to be preserved from an attack of that disease. I repeated this lecture, after the cholera had commenced its ravages in the city; and, notwithstanding the powerful opposition to the opinions which I advanced, a very considerable number of citizens strictly adhered to my advice. And it is an important fact that, of all who followed the prescribed regimen uniformly and consistently, not one fell a victim to that fearful disease, and very few had the slightest symptoms of an attack. The following statements, which were received from respectable individuals soon after the disease had disappeared from the city, may be relied on with the fullest confidence:—

“‘In stating my views of a simple diet,’ says Dr. Amos Pollard, ‘as a means of preserving health and preventing disease, I must necessarily be brief for want of time. I think I have the most ample evidence of its salutary and conservative effects in my own person. I had been afflicted, both before and during my medical studies, with the worst of diseases—chronic dyspepsy—from which I never obtained any permanent relief until about eighteen months since, when I put myself on the simple mode of living recommended in your lectures. For nearly a year I subsisted principally upon coarse wheat-meal bread and milk, with great advantage to my health, when, happening to get some milk which tasted and smelt of garlicks, I became so disgusted with it that, in May last (1832), I exchanged my milk for spring water, which, with the coarse bread, has constituted my diet mainly ever since. During the past summer, and especially the cholera season, my professional duties were exceedingly arduous, and I often felt myself nearly worn-out for want of rest and sleep. Yet, through the whole sickness, I subsisted on one pound per day of coarse, unleavened, wheat-meal crackers, with some fruit and spring water, and experienced no disorder of the stomach or bowels; but enjoyed, and still continue to enjoy, far better health than I have experienced before for the last fifteen years. I also gained several pounds in weight during the cholera season. Many people, and (among them) some of my own profession, have asserted that simple vegetable diet is conducive to, and in many cases has actually produced, cholera. Both in hospital and private practice I have taken considerable pains to investigate these matters, and in not a single instance have I been able to verify their assertions; but, on the contrary, I have uniformly found that every person who has strictly and judiciously observed such a diet, under a well-regulated general regimen, has not only escaped the cholera, but enjoyed excellent general health.’”\*

Dr. D. M. Rees, whose practice and success were, at least, equal

\* Graham's Lectures. Vol. II., p. 247.

to any other physician's in New York, declares that when the cholera broke out in that city, and he was called to practice among it, he found that the disease was making its greatest ravages among the excessive flesh-eaters, and he consequently went home and requested his family to abstain entirely from the use of flesh during the continuance of the epidemic in the city; and he and his family subsisted wholly on a vegetable and milk diet while the cholera prevailed, without having anything of the disease, except in one instance, near the close of the sickness, when Mrs. R., without his knowledge, partook of flesh meat, and in a few hours after was taken with diarrhœa. Precisely the same thing happened to Mr. Henry R. Piercy and his wife; and Dr. Rees says that all who conformed strictly to his advice wholly escaped the disease.

“Dr. Tappan, who superintended the Park Hospital, has assured me,” says Mr. Graham, “that out of twelve house-pupils (students of medicine and young physicians) who assisted him in the hospital during the prevalence of the cholera, Mr. Sharrock, who had lived (more than a year) very strictly on a simple vegetable diet, was the only one who entirely escaped all symptoms of the disease, all the others being attacked more or less violently, and some quite severely.” Mr. Graham gives a great many more instances of persons who enjoyed good health, and were protected from the cholera while they lived upon a purely vegetable diet. And this mode of living has made such rapid progress in several parts of the United States, that Graham Houses (that is, hotels where neither animal food nor fermented liquors are provided) are as common as Temperance coffee-houses in this country.

The observations of the poet Shelley may aptly conclude this portion of the subject: “There is no disease, bodily or mental, which the adoption of vegetable diet and pure water has not infallibly mitigated, wherever the experiment has been fairly tried. Debility is gradually converted into strength, disease into healthfulness; madness, and all its hideous variety—from the ravings of the fettered maniac to the unaccountable irrationalities of ill-temper that make a hell of domestic life—into a calm and considerate evenness of temper, that alone might offer a certain pledge of the future moral reformation of society. On a natural system of diet old age would be our last and our only malady. The term of our existence would be protracted; we should enjoy life, and no longer preclude others from the enjoyment of it; all sensational delights would be infinitely more exquisite and perfect; the very sense of being would then be a continued pleasure, such as we now feel it in some few and favoured moments of our youth. By all that is sacred in our hopes for the human race, I conjure those who love happiness and truth to give a fair trial to the vegetable system. Reasoning is surely

superfluous on a subject whose merits an experience of six months would set at rest for ever. But it is only among the enlightened and benevolent that so great a sacrifice of appetite and prejudice can be expected, even though its ultimate excellence should not admit of dispute. It is found easier by the short-sighted victims of disease to palliate their torments by medicine than prevent them by regimen. The vulgar, of all ranks, are invariably sensual and indocile, yet I cannot but feel persuaded that, when the benefits of vegetable diet are mathematically proved, when it is as clear that those who live naturally are exempt from premature death, as that one is not nine, the most sottish of mankind will feel a preference towards a long and tranquil, contrasted with a short and painful, life."

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## CHAPTER X.

### VEGETABLE DIET CONDUCTIVE TO NORMAL SYMMETRY OF MAN.

So many causes influence the human frame for good or evil, that I shall not attempt here to enumerate them; yet food is certainly one influence. I do not assert that marked and sudden effects will follow from a change in diet; for the processes of decay and reparation are slow. Nor yet do I affirm that a plain child may become an Apollo or a Venus by a well-chosen vegetable diet, but only that it may have a considerable amelioration of form and feature. It will reduce those who are unwieldy (as was Dr. Cheyne) to a more reasonable size and weight\*: it will add stoutness to the emaciated. In short, a natural diet tends to produce and maintain that due admixture of muscle and fat which is best suited to bodily and mental activity.

I do not say that none can have normal development in symmetry and beauty under a diet chiefly animal. By dint of much exercise they undoubtedly can. Size and beauty are modified by climate, air, occupation, and other causes; nevertheless, in very many national examples, we find vegetable feeders remarkable for beauty—as the Persians, the people of the Marquesas and Washington Islands; the peasants of Ireland, of Lancashire, and Cheshire; the natives of Pitcairn's Island, and the Mexican Indians. The Patagonians, though flesh-eaters, are tall and very broad, as well as handsome. On the contrary, it is easy to adduce plenty of human tribes who are entirely flesh eaters, but dwarfed and uncouth, and neither strong nor brave.

\* When I first commenced the system, my weight was 12 stone 8½ lbs. For eighteen months I continued my usual ale, porter, or wine, and varied in my weight a pound or two more or less. On giving up all intoxicants, my weight in another eighteen months fell to 11 stone 7½ lbs.



## CHAPTER XI.

## VEGETABLE DIET CONDUCTIVE TO REAL ENJOYMENT OF FOOD.

THE prevalent notion that vegetable diet requires the continual exercise of self-denial, and considerably diminishes the pleasures arising from the gratification of the palate, is with many persons the most weighty objection to any change. This notion, however, is decidedly erroneous. Under natural diet the organs of smell and taste become more sensitive, and the enjoyment of food is constant. I do not say that the vegetable eater looks forward to a meal with the cravings of a *bon vivant*; nor is a sensualist to be envied. He who eats naturally, as to quality and quantity, can pursue higher objects undisturbed by thought of food, can defer his meal without inconvenience, and enjoy it with hearty zest when it comes. It is true that those who are new in vegetable diet may find it hard to deny themselves a favourite dish; but resolution and mental conviction will gradually remove the coveting. My own experience is, that when, from curiosity to observe the effects, I partook of animal food again, it gave me disgust at first, and many uncomfortable sensations, which vanished in two or three days. I always returned with pleasure to my simpler diet, and found my enjoyment in it more complete.

Each person has become adapted to his ordinary fare; but it is an error to imagine that one's own food is the only pleasant food, or that we ourselves are incapable of a change of taste. Every physiologist will admit that if some other food than that which is habitual to us is more adapted to our organs, that food (if we do but accustom ourselves to it) will at length give to the palate its purest and most satisfactory gratification. Indeed, if half the attention which is bestowed on cooking the flesh of animals were spent on fruits, roots, and grain, we should have a vastly enlarged profusion of nutritious and agreeable vegetable dishes.

It is generally supposed that pepper, salt, and other condiments are more necessary to vegetable than to animal food; which is the reverse of truth. Sugar, treacle, and honey may be needed when the saccharine element is deficient, but much salt is bad. If it be decomposed in the system, its metallic base (*sodium*) assists in forming *urate of soda*, which occurs so often in gout and rheumatism. Against worms and other maladies salt is an excellent medicine; but, as a daily condiment to vegetable diet, it cannot fail to be pernicious.

## CHAPTER XII.

## VEGETABLE DIET FAVOURABLE TO MENTAL ACTIVITY.

As with alcoholic liquors, so with flesh meat : those who have reluctantly admitted that the food or drink which they love does *not* conduce to health or physical strength, betake themselves to the assertion that it is necessary to *mental* vigour. But they have no proof of it. Of course, it is also difficult to prove that vegetable food has in this matter a *superiority* ; for national intellect depends on institutions and training very largely. When men are moderate in the quantity of their food, and active in their habits, its quality can play but a secondary part on the intellectual development. Yet I do contend that, *all other things being equal*, a vegetable diet is *more* favourable both to mental and to moral culture than animal food. Sir John Sinclair regards this as an obvious certainty. The celebrated Franklin (he urges) concluded by trials that a vegetable diet promoted clearness of head and quickness of perception. Irish boys (says he) are clever, only so long as they are kept on the simple food of the peasantry, but become dull and stupid when kept on flesh meat.

In the orphan asylum of Albany (New York State), from eighty to one hundred and thirty children in the close of 1833 were changed to a pure vegetable diet. Three years afterwards, the principal teacher distinctly declared that the benefit to the intellectual powers of the children was too striking to be doubted.

Dr. Korke, an eminent teacher from Switzerland, had become master of the principal school in the Greek island of Syra. He spoke with enthusiasm (in 1828) of the mental sprightliness of the Greek children, and attributed their high mental capacity to their diet chiefly on coarse bread, fruit, and water. Figs, raisins, and other food were a large part of their food. Dr. Korke was certain that they had not an ounce of flesh meat in a month.

Mr. John Burdell, of New York, spent the winter of 1836-7 on the Island of St. Croix, in the West Indies, and attests that the field-negro children learnt to read with great ease ; but little negroes of the same age brought up in the master's house, were disinclined to instruction and slow to learn. He attributes it to the latter being fed on flesh meat.

Many persons wrongly imagine the Hindoos to be deficient in bodily and mental activity, and attribute this to their vegetable diet. Of course their climate tends to repose, and many of their social institutions enforce stagnation and preclude enterprize. Yet many of those Hindoos who are pure vegetarians have intellectual endowments and acquirements which adorn the foremost nations of earth.

Among the historical nations of Europe we have many bright

examples of men, eminent for genius or talent, discarding the use of flesh meat; and some of them (as we know) without any philosophical reasoning on the subject, adopted their diet from experience that under it they could study with greater freedom and energy. I refer to such men as Pythagoras, Menedemus, Zeno the stoic, Epicurus, and many other philosophers of antiquity; to our own immortal Newton, who, while writing his great work on Optics, lived without animal food. Lord Byron excluded flesh from his meals, though his diet was far from judicious. Shelley—whose poetic power, compass of imagination, and elegant diction have seldom, if ever, been surpassed—was both a rigid abstainer from flesh, and an able advocate of vegetable diet.

Am I contending for a paradox? or is not common sense with me? After a full meal of animal food, the mind is indisposed to deep thought; sleep is more natural than study, unless people wake themselves up by wine—a dangerous process. After dinner the flesh-eater has not his mental powers as free as in the morning, but with the vegetarian “it is morning all day long.”

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## CHAPTER XIII.

### VEGETABLE DIET FAVOURABLE TO THE MORAL STATE.

WITH Sir John Sinclair I hold that flesh meat causes a desire for alcoholic liquor, “to obviate, in some degree, the *septic* tendency” of flesh; *i.e.*, to counteract the tendency of animal food to putrefy. Teetotallers greatly err when they eat more flesh meat because they have abandoned intoxicating drink: physiology teaches that if they renounce the latter they should dispense with the former: that is the true way to abate a craving for intoxicating liquors.

As soon as Noah had received permission to eat animal food, he made wine, and became drunken. When Jacob brought to his father Isaac savoury meat of goat’s flesh, we read likewise that “he brought him wine, and he drank.” The Jews, when called by the prophet Isaiah to weeping and mourning, on the contrary betook themselves to eating flesh and drinking wine. Solomon unites “wine-bibbers” to “riotous eaters of flesh.” The joint influence of the two stimulants on man is universally admitted; but the direct action of intoxicants on the brain has led to overlooking the mischief of the solid meat. Nevertheless, various facts demonstrate that flesh meat encourages the selfish and lower propensities.

Carnivorous animals are ferocious; the herbivorous are gentle,



sociable, playful : yet the carnivorous may be greatly subdued by a change of diet. For, if we may trust the accounts, even young tigers, carefully restrained from tasting flesh, are free from ferocity. It was believed by the ancients that the mares of Diomedes, king of Thrace, became ferocious when he fed them on the flesh of strangers. "Cattle fed on fish," says Bishop Heber, "fatten rapidly, but it totally changes their natures, and makes them unmanagably fierce." The prophet Isaiah points at the tendency of a flesh diet to ferocity, when he describes the reign of peace thus : "The wolf and the lamb shall feed together, and the lion shall eat straw like the bullock."

Nations and individuals who indulge much in flesh meat are observed to be more licentious and cruel. The Tartars are thus remarked on by Sir John Sinclair ; and in contrast he points at the Brahmin and Gentoo for mildness of feeling.

The direct influence of food upon the temper, passions, and moral feelings, seems to be admitted by all who have attentively considered the subject. Porphyry of Tyre—who lived about the middle of the third century, and was a favourite disciple of Plotinus the Platonist—was of this opinion. "Give me a man," says he, "who considers seriously whence he came, and whither he must go ; and from these considerations resolves not to be led astray or governed by his passions. And let such a man tell me whether a rich animal diet is more easily procured, or incites less to irregular passions and appetites, than a light vegetable diet ? But if neither he nor a physician, nor indeed any reasonable man whatsoever, dares to affirm this, why do we oppress ourselves with animal food ? And why do we not, together with luxury and flesh meat, throw off the incumbrances and snares which attend them ? It was not from those who lived on vegetables that robbers, murderers, sycophants, or tyrants, have proceeded, but from *flesh-eaters*. The necessaries of life are few and easily acquired, without violating justice, liberty, or peace of mind : whereas luxury obliges those vulgar souls who take delight in it to covet riches, to give up their liberty, to sell justice, to misspend their time, to ruin their health, and to renounce the joy of an upright conscience."

Dr. Lambe distinctly believed that three years of vegetable diet improved the moral qualities of a boy, ten years old, who was placed under his care. Arbuthnot declares, "I know more than one instance of irascible passions being much subdued by a vegetable diet." Mr. Thackrah, of Leeds, attests that, in a case known to him, vegetable diet had lessened excitability of temper. On the contrary, Fuseli, the painter, and Mrs. Radcliffe while writing the "Mysteries of Udolpho," ate raw meat in order to engender horrible fancies in their imagination.

Few parents are aware of the moral mischief they bring on their children by training them early to the use of animal food.

By stimulating the constitution, it weakens the digestion of the weakly, and develops the robust prematurely. This topic needs to be dispassionately and profoundly examined. The moral evils of prematurity are enormous. Vegetarian food, which, as we said at the beginning, was the food of man's original innocence, is the food on which he must live in the reign of peace, justice, and truth.

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## CHAPTER XIV.

### VEGETABLE DIET FAVOURABLE TO LONGEVITY.

LONGEVITY does not mean decrepitude : decrepitude cannot be sensibly prolonged, but years of sensitive vigour may be added before it. This (says Dr. Southwood Smith) is a fact of deep interest. Indeed, the exact age cannot be fixed at which a man becomes old. Some are older at fifty than others at seventy ; and there are cases at which a man who has reached his hundredth year is sensibly no older than most men at eighty. To add ten or twenty years to life does not add this term to the time of decrepitude, but to the time of mature manhood—the time in which the human being is capable of receiving and communicating the largest measure of the noblest kind of enjoyment.

We must assume that there is some normal age at which death is natural to man ; an age, therefore, which all might attain, if all lived naturally and were born robust. What then hinders the attainment of the full period, besides accidents and violence, and disease from external causes ? Among evil habits we here give prominence to exhausting diet. There is a certain normal rate at which the decay of tissue ought to go on in the body. When decay is more rapid than is normal, the man is *living too fast*, which must necessarily tend to shorten life.

Liebig infers, from a comparison of the secretions of animals, that the decay of tissues is more rapid in the carnivora than in the herbivora. The experiments of Dr. Fife on human respiration led to the same inference concerning a man fed on animal as compared to a man fed on vegetable food. His conclusion is corroborated by the experience of Mr. Spalding, a professional diver, who noted his consumption of oxygen in his diving bell, and learned practically that it was his wisdom to avoid flesh meat and spirituous liquors, which caused him to need more oxygen. From another quarter we have casual confirmation. Drs. Marcott, Oliver, and other physiologists attest that chyle elaborated from animal food putrefies more rapidly than chyle from vegetable food. The general result that we deduce is, that under the more stimulating diet the human machine is worked

*beyond* its normal rapidity—a fact which must bring on earlier the time at which the solids become dry, inelastic, rigid, and finally are ossified. This is the term of natural death.

[In the last thirty years there has been active controversy about extreme longevity. Sir George Cornewall Lewis, and many others, avowed disbelief that the age of 100 years was, in any case, well attested. Few scientific men now admit that any stress can be safely laid on the age ascribed to Henry Jenkins, Old Parr, and the Countess of Desmond. Concerning the vast age of Arabs we never can attain definite proof. If Mr. Smith could revise his work, he perhaps would now give less weight to the assertions of English writers, who cannot have had the means of knowing that Arabs, Brazilians, or Brahmans, have attained the age of 200 or 300 years. Nevertheless, the celebrated Professor Owen, while rejecting such statements as unattested and quite abnormal, does not go along with Sir G. C. Lewis's incredulity about centenarians. It seems now to be established, that at every time in most great nations there is a part of the population which attains the age of 100. That even this is not the extreme, and that the ages of 103 and 106 are occasionally reached, we appear to have frequent recent attestations. The author's argument is in the following somewhat pared down.—Ed.]

“The more slowly man grows,” says Professor Hufeland, “the later he attains to maturity, and the longer his powers are in expanding, so much the longer will be the duration of his life; as the existence of a creature is lengthened in proportion to the time required for expansion. Everything therefore that hastens vital consumption shortens life; and consequently the more intense the vital action, the shorter the life. If you would live long, live moderately, and avoid a stimulating, heating diet, such as a great deal of fish, flesh, eggs, chocolate, wine, and spices.” Animal food, and all other stimulating diet, particularly in youth, do incalculable mischief, though by such slow degrees, that in general the evil is neither perceived nor suspected. The stream of life is hurried on precipitately, the passions are prematurely developed, and, like a plant that has been forced too rapidly by artificial heat and stimulating composts, the organism is exhausted, and it becomes diseased and old when it would, under a more appropriate diet, have been in its perfection.

“It has been established, on the best grounds,” says Hufeland, “that our nourishment should be used in form rather coarse, securing full mastication and insalivation, and a longer retention in the stomach. Plain, simple food only, promotes moderation and longevity, while compounded and luxurious food shortens life. The most extraordinary instances of longevity are to be found among those classes of mankind who, amidst bodily labour and the open air, lead a simple life, agreeable to nature, such as farmers, gardeners, hunters, &c. The more man follows nature,



and is obedient to her laws, the longer will he live ; the further he deviates from these the shorter will be his existence. Rich and nourishing food, and an immoderate use of flesh, do not prolong life. Instances of the greatest longevity are to be found among men who, from their youth, lived principally on vegetables, and who perhaps never tasted flesh." It seems," says Lord Bacon, in his "Treatise on Life and Death," "to be approved by experience that a spare and almost Pythagorean diet, such as is prescribed by the strictest monastic life, or practised by hermits, is most favourable to long life."

The Pythagoreans, who lived on a simple vegetable diet (says Hufeland) afforded the most numerous instances of old age. "The Essenes, as we call a sect of ours," says the Jewish historian Josephus, "live the same kind of life as those whom the Greeks call Pythagoreans. They are long-lived also, insomuch that many of them live above a hundred years by means their of simplicity of diet and the regular course of their lives."

It is said that in no part of the world (in proportion to its population) are there more instances of extreme longevity than among the Norwegian peasantry, who scarcely ever taste animal food. In the severe climate of Russia also, where the inhabitants live on a coarse vegetable diet, there are a great many instances of advanced age. The late returns of the Greek Church population of the Russian empire give (in the table of the deaths of the male sex) more than one thousand above a hundred years of age, many between one hundred and a hundred and forty, and four between one hundred and forty and one hundred and fifty. It is stated that to whatever age the Mexican Indians live they never become grey-haired. They are represented as peaceable cultivators of the soil, subsisting constantly on vegetable food, often attaining a hundred years of age, yet still green and vigorous. Of the South American Indians Ulloa says : "I myself have known several who, at the age of a hundred, were still very robust and active, which unquestionably must in some measure be attributed to the constant sameness and simplicity of their food." Both the Peruvian Indians and the Creoles are remarkably long-lived, and retain their faculties and vigour to a very advanced age. Slaves in the West Indies are recorded from one hundred and thirty to one hundred and fifty years of age.

We cannot bring the argument to a scientific demonstration unless we could compare vegetable feeders with the feeders on animal food, in regard to longevity, *with all the other circumstances the same*. Nevertheless, it is clear that eminent physiologists and able impartial inquirers have been impressed with the belief that vegetable diet *tends* to longevity. Flesh-eaters—nay, intemperate eaters and drinkers—are sometimes long-lived ; but

we are justified in saying they would have lived *longer still* on a wiser diet.

[It does not appear that centenarians are claimed among any flesh-eating tribes; nor among ourselves, from those who have made flesh meat any considerable part of their diet.—ED.]

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## CHAPTER XV.

### DIET IN RELATION TO POPULATION.

I TRUST we are upon the eve of a glorious period, when the physical, mental, moral, and social laws of human life shall be more clearly ascertained, and effectually directed to the promotion of the greatest good of mankind. There are cogent reasons for believing that fruit, roots, grain, and other vegetables must at length become the general, if not the universal, food.

In a rapidly-increasing population, where there is no waste land, it becomes more and more difficult to provide flesh meat for all. It is a wasteful diet.

If men live on flesh *alone*, they need an enormous quantity of it. The contrast between flesh-eaters and vegetable-eaters, as to the quantity which they require, is very instructive. The voracity of the Esquimaux astonished Captain Ross. While one salmon and a-half sufficed for five of his company (with wheaten biscuit, no doubt), each Esquimaux devoured two raw salmons, or 14 lbs.; and (he adds) "it was probably a lunch after all, or a superfluous meal for the sake of our society." He further remarks that the Arab, on one small allowance of barley-meal in the day, is more enduring of fatigue, is stronger and more active than the Esquimaux, who perhaps eats 20 lbs. of flesh and oil. It is attested by the Rev. Mr. Armes, a missionary, that it is a very common thing for a single Patagonian to consume from 15 to 20 lbs. of flesh in the course of a day. According to Ross Cox, an agent of the American North-western Fur Company, the Canadian boatmen and others in the company's service receive according to stipulation,—and, when they have no other food, regularly consume—8 lbs. of flesh per day for each man, or 10 lbs. if it contain any bone; and these men, if their rations of food are cut short for two or three days, are exhausted and unstrung. On the contrary, experiment has fully proved that 2 lbs. of good wheaten bread will sustain a man accustomed to such diet longer and better than 8 lbs. of the best flesh meat. The Russian and Greek labourers will perform a long day's work with activity and cheerfulness upon about 1 lb. of coarse

bread, with a small bunch of garlic, figs, raisins, apples, or other fruit, which of course contains little *nitrogen*. Millions of the Indians and Chinese subsist upon a few ounces of rice a day for each, and are well nourished and athletic. (See statements in Chaps. II. and IV., above.) The American Indian will travel far and subsist long on a small bag of maize parched and pounded, taking only 6 or 8 ozs. of it per day, mixed with water.

The explanation of this great contrast lies in the fact that the flesh of wild animals is generally very lean, and therefore deficient in the material needed to supply animal heat; hence, the colder the climate, the more voracious the flesh-eater. The Esquimaux indeed obtain blubber and oil, which might have seemed satisfying. If we cannot wholly account for the facts as stated, the great voracity of these tribes remains indubitable. It may perhaps be objected that carnivorous animals (in our menageries) do not need any great quantity of flesh. It is true that they are less voracious than a *man* who lives on flesh alone, because they have no perspiratory pores and remarkably thick skins, hence they need less heat-giving material in their food. Their anatomy and structure is naturally adapted to the food. But to man an unmixed diet of flesh, most persons will allow, is simply unnatural; hence he eats voraciously of it, if it be lean, to get a supply of the element in which it is deficient. Liebig (who is no vegetarian) ascertained, by chemical analysis, that 15 lbs. of flesh contain no more than 4 lbs. of starch; whence he concludes that if a man whose usual diet contains *equal* weights of flesh and starch should discontinue the starch, he would require five times\* as much flesh as before. According to this, 1 lb. of starch is equivalent to 4 lbs. of flesh; which agrees pretty well with the statements of fact made above.

The Poor-law Commissioners found that many of the Irish peasantry consume nine pounds of potatoes in their two daily meals. Four pounds of potatoes may be estimated as nearly equivalent to one pound of flour, or to rather more than one and a quarter pound of bread; therefore, nine pounds of potatoes are equal to three pounds of bread; but, as two pounds of bread daily are found to be sufficient for the support of a man taking moderate exercise, it would appear that nine pounds of potatoes to each individual daily is too high an estimate. The amount of potatoes necessary for the support of a family consisting of a man, his wife, and four children, is calculated (by Sir John

[\*If the man ate *and* needed 4 lbs. of flesh and 4 lbs. of starch in a given time, then upon losing the 4 lbs. of starch, he would have to replace it by 15 lbs. of flesh, so that 19 lbs. of flesh would be his quantum. This is *nearly* five times as much as before. The argument assumes that equal quantities were *needed* in the first place; but the quantity of heat-giving food needed must vary with climate, and clothing, and activity. Activity lessens the need of heat supply, and increases the need of nitrogenous supply.—Ed.]



Sinclair) to be about fourteen thousand pounds for a year, or nearly seven pounds to each individual daily.

In the year 1840, some experiments were made on the effects of different diets on the prisoners confined in the Glasgow Bridewell, and the following extract from the report of the inspectors of prisons deserves notice, as illustrating the preceding remarks on the nutritive powers of potatoes :—

Eighth Diet—cost, including cooking,  $1\frac{3}{4}$ d.  
 Breakfast—2 lbs. of potatoes (boiled).  
 Dinner—3 lbs. of potatoes (boiled).  
 Supper—1 lb. of potatoes (boiled).

“A class of ten young men and boys was put on this diet. All had been in confinement for short periods only, and all were employed at light work—teazing hair. At the beginning of the experiment, eight were in good health, and two in indifferent health; at the end the eight continued in good health, and the two who had been in indifferent health had improved. There was, on an average, a gain in weight of nearly three pounds and a-half per prisoner; the greatest gain being eight pounds and a-quarter, by a young man whose health had been indifferent at the beginning of the experiment. Only two prisoners lost at all in weight, and the quantity in each case was trifling. The prisoners all expressed themselves quite satisfied with this diet, and regretted the change back again to the ordinary diet.” Another experiment was as follows :—

First diet—Cost, including cooking,  $2\frac{3}{4}$ d.  
 Breakfast—8 oz. of oatmeal, made into porridge, with a pint of buttermilk.  
 Dinner—3 lbs. of boiled potatoes, with salt.  
 Supper—5 oz. of oatmeal, made into porridge, with half a pint of buttermilk.

“Ten prisoners were put on this diet (five men and five boys), all under sentences of confinement for two months, and all employed at light work (pieking hair and cotton). At the beginning of the experiment, eight were in good health, and two in indifferent health; at the end, all were in good health; and they had (on an average) gained more than four pounds each in weight; only one prisoner (a man) having lost weight. The greatest gain was nine pounds four ounces, and was made by one of the men: the prisoner who was reduced in weight had lost five pounds two ounces.”

That a considerable degree of physical power may be maintained on potatoes only, we learn from Dr. John M. Andrew, of Remsen, N.Y., who, after having adopted a vegetable diet for sixteen months, thus writes: “I do not go beyond the truth when I say that I cannot find a man to vie with me in the field,

with the scythe, the fork, or the axe. I do not want anything but potatoes and salt, and I can cut and put up four cords of wood in a day, with no very great exertion. I have frequently been told by friends that my potato and salt system would not stand the test of the field; but I have silenced their clamour by actual demonstration with all the implements above named. At present no consideration will induce me to return to my former mode of living."

Barley is considered an extremely nutritious article of diet. A member of the medical profession at Munich had to supply with provisions a number of persons under his care, and he found, from considerable experience, that soup made out of pearl barley, split peas, and potatoes boiled about three hours, and poured upon some bread cut small, yielded one of the most satisfying, wholesome, and nutritious diets he could produce. He ascertained that nineteen ounces of this soup afforded sufficient nourishment for a full-grown person. There was no animal food or fat in it; he only added a little salt and a little ginger. He found that *no other substance* was a substitute for the barley. He tried flour, rice, and other things, but the soup was never found to be so nutritious and strengthening.\*

It must appear from all this how very wasteful it is for a great nation to live on an *exclusively* flesh diet. Indeed, it may be shown that a diet of potatoes and fruit would support from a given area a HUNDRED times as many human beings as could be maintained from it on flesh alone. But we English do not live on flesh *alone*. Were all the inhabitants of the United Kingdom so dieted, the land could only supply food for five millions six hundred thousand inhabitants. But I calculate, that, with the present methods of culture, the islands could maintain 112 millions on fine fruit, grain, and roots; 224 millions on grain and other vegetables; 560 millions on potatoes and common fruit. If due honour were given to fruit, many trees now useless would be replaced by apple and pear trees. But in fact, science will aid, as soon as we return to a natural diet, in multiplying our resources from the vegetable kingdom, which are endless. If fruit or ordinary bread fail, the juices and fibres of plants will be pressed into our service. Wood can be converted into starch, and starch into sugar or vinegar. "When lignin (the principle of wood) is comminuted (into sawdust?) and reduced by artificial processes," says Dr. Prout, "it is said to form a substance analogous to the amylaceous principle, and to be highly nutritious." Professor Autenrieth, of Tübingen states, that when wood is deprived of everything soluble, reduced to powder, repeatedly subjected to the heat of an oven, and then ground in the manner of corn, and boiled with water, it yields a flour which

\* London Encyclopædia. Article, "Food."

forms a jelly, like that of wheat starch ; and, when fermented with leaven, makes a perfectly uniform and spongy bread.

The *Moniteur*, in May, 1830, mentioning that wheat straw, chopped and ground, yields a flour of a coarse description, but agreeable and nutritious—added, that its bread was *superior* to the *common* bread used by the lower orders on the Continent. Chance led a miller, in the Côte d'Or, to discover the means of converting straw into a farina of pretty good quality. Lately the Duc d' Angoulême, passing through Dyon, tasted some small loaves made of it, and took some to show the king. It was M. Maitre, founder of the agricultural establishment of Viloffe, near Chatillon, who first discovered it. He has since found that not only the straw of corn and other grains may be made into flour, but that hay and the stalks of trefoil, lucerne, and sainfoin, are also convertible. Flour from these last he gives to his sheep and lambs.\*

The public papers of March, 1830, stated that Mr. Gouldson had discovered a mode of separating and preparing the farinaceous parts of such bulbous roots as carrots, turnips, parsnips, bect, &c., and of converting them into a fine flour. After two years' experiment, he has now obtained a patent. He declares that he really produces good and nutritious bread, equal, both in quality and colour, to the finest white wheaten bread. The quantity of farina to be obtained from the roots grown upon any given quantity of ground, compared with that produced from the ears of wheat on the same space, is increased (he says) at least twenty times.

Some may be led to doubt the truth of my calculations, because of the large numbers resulting ; yet they are based on undeniable facts, which were fully admitted by Mr. Arthur Young and Mr. Newenham. The estimated produce of an acre of land is—of mutton, 228 lbs. a year ; beef, 182½ lbs. ; wheat, 1,526 lbs. ; potatoes, 22,400 lbs. But Dr. Knight informs us that a small plantation of the early ash-leaved kidney potato produced 665 bushels of 80 lbs. each per acre, *i.e.*, 53,200 lbs. ; also of the red-nosed kidney potato 34,122 lbs. per acre have been obtained by Mr. Rawson's process. The chesnut tree is still more productive than the potato, as Rousseau and St. Pierre ascertained. Indeed, in tropical countries the fruit trees go far beyond our measure. Especially, the bread fruit and the banana may be named. Humboldt calculated that 1,000 square feet (*i.e.*, a square whose side is under 32 feet long) planted with the banana will produce 4,000 lbs. of its nutritive fruit, while the same space would grow only 35 lbs. of wheat and 514 lbs. of potatoes.

In fact, minute calculations are needless ; for no one who will

\* Bull. Univer. June 1830. P. 157.



look closely into the matter can doubt, that by abandoning butchers' meat, and cultivating for grain, pulse, and potatoes a large part of the vast area which is now under grass, we should enormously multiply the quantity of available human food ; that is, we should have the means of supporting a greatly increased population. On the other hand, we should need a great increase of population so to cultivate the land. Out of these two undeniable certainties it follows that the pressure of population, when a considerable increase comes, must forcibly drive down the consumption of butchers' meat. Evidently, if mankind is to increase largely, nations must hereafter live on vegetable food more and more. There is no uncertainty as to this. It is true, and it is undeniable, whether we do or do not like the prospect.

No one can foresee the rate at which any particular land will increase its population. Emigration has arrested the increase of numbers in Ireland ; the same may happen in England. Mr. Alison expects a decay of national virtue (*i.e.*, an increase of vice and indolence and crime), a decay of wealth, and an arrest or diminution of population : nay, he pictures our "fields returning to pristine desolation, and savage animals regaining their long-lost habitations." This very dreary picture is, no doubt, possible, on the assumption that we are about to become licentious and corrupt, like certain conquering nations of old, to whom he compares us. But I anticipate a happier destiny for our island, and for Christendom.

Our prosperity has arisen from industry, not from conquest and robbery. We are not a nation of slaves or serfs, with a wealthy privileged class at their head. In this country has arisen a middle class, through whom we may hope for just laws and equal rights. The invention of printing, and the spreading conviction that we must have national education, augur for us a future different from that of ancient states ; and above all, Christian sentiment is laying the foundations of sound national institutions. The mass of the people is to be so elevated by instruction and moral training, that their language, manners and habits shall no longer separate them from their fellow-men. In this state the rich man will not consume the produce of an acre at a meal, while his unfortunate brother is left to starve. Population, unchecked by wars, pestilence, and other causes (of which by far the most depopulating is licentiousness), increases at a steady rate, and presses on the supply of foods. This must force up the price of that sort of food which cannot be supplied rapidly enough. Hence, when we know that by fruit and farinacea the land can maintain from 50 to 100 times as many persons as by flesh meat alone, and that vegetable food is conducive to the physical, mental and moral interests of man, we ought not to doubt that a vegetable diet must hereafter become universal.

Then may it be said of man, in the words of Shelley :

No longer now  
 He slays the lamb that looks him in the face.  
 \*            \*            \*            \*            \*

No longer now the wingèd habitants  
 That in the woods their sweet lives sing away  
 Flee from the form of man ; but gather round,  
 And prune their sunny feathers on the hands  
 Which little children stretch, in friendly sport,  
 Towards these dreadless partners of their play.  
 All things are void of terror : man has lost  
 His terrible prerogative, and stands  
 An equal amidst equals : happiness  
 And science dawn, though late, upon the earth.  
 Peace cheers the mind, health renovates the frame ;  
 Disease and pleasure cease to mingle here ;  
 Reason and passion cease to combat there ;  
 While each, unfettered, o'er the earth extends  
 Its all-subduing energies, and wields  
 The sceptre of a vast dominion there ;  
 While every shape and mode of matter lends  
 Its force to the omnipotence of mind,  
 Which from its dark mine drags the gem of truth,  
 To decorate its Paradise of Peace.

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## CHAPTER XVI.

### CONCLUDING REMARKS.

I DO not expect that those of my readers who enjoy what they consider good health will be induced to test for themselves the truth of the views advocated in this work. They will perhaps say, "It is all very well for those to adopt a fruit and farinaceous diet who find a necessity for so doing ; but, as we possess excellent health, and enjoy our food, we are satisfied that a mixed diet agrees with us best, and, therefore, shall make no change, but 'let well alone.'" They may think that constitutions are different, and that the food which agrees with some may not suit others. To such I would only observe, that the digestive and chylo-poietic organs of all men are formed after one type ; and that constitutions differ merely by slight congenital peculiarities, modified by long habit ; and these differences would prove no serious obstacle to the gradual adoption of a more natural diet. If fruit and farinacea be the natural and best food of man, there cannot be a doubt that all would find this diet more conducive to perfect health, real pleasure, and long life, than any other. But let no

one attempt the change who is not convinced that great benefits are to be derived from it, or who is not determined to bear patiently the inconveniences that may be at first experienced. To commence requires great self-denial; and to reap all the pleasures and advantages that result, demands great perseverance. Unless, therefore, the mind be firmly resolved, the desire for more tasty and stimulating food will be continually recurring; and, so long as this is the case, no relish will be acquired for more simple fare. I should be sorry to induce anyone to make such alterations in his mode of living as would diminish his pleasures, or interfere with the real enjoyment of life; and must leave each to adopt that course which he thinks will secure to him the most permanent felicity. "Let every man be fully persuaded in his own mind: prove all things, and hold fast that which is good." Many, however, who are suffering from disease, will be disposed to make trial of a diet which promises so many advantages; and it is to such that the following cautions and advice are more particularly addressed.

The generality of persons who have not lived on a full animal diet may at once make the change without experiencing much inconvenience: but others will find it safer to adopt a fruit and farinaceous diet by degrees, and to permit a few weeks to elapse before they live on it exclusively. It has been already stated that the gastric juice and other secretions vary with the character of the food: slight indisposition, therefore, may attend any sudden change of diet. It has also been shown that, when a stimulating diet has been exchanged for a simple yet nutritious one, the circulation and respiration will probably become slower; the physical force may appear diminished; the frame may become languid, and the spirits less buoyant. No one, however, need be alarmed at these effects: they are but temporary, and will soon be succeeded by more agreeable sensations. Prejudices against an exclusively vegetable diet are so strong, that those who commence it are apt to attribute to its use every disagreeable feeling, and every deviation from health which they experience, regardless of many other circumstances which may have been the real cause. It must not be expected that the trial of a few weeks, or even of a few months, will be sufficient to eradicate any serious disease: some progress may be made in that time, but Nature is slow in all her operations; and it is necessary that the whole of the blood, and a considerable portion of the tissues, should be renewed before a complete state of health can be expected. In simpler and less dangerous disorders, a state of convalescence is very often produced remarkably soon. Medicine may in many cases succeed in effecting a cure much more rapidly; but, without a proper attention to diet, there is continual danger of a recurrence. Those who have been in the habit of taking much animal food should commence the



change with farinaceous articles, or preparations from them (such as rice, sago, barley, whcaten flour, oatmeal, potatoes, &c.), rather than with fruits, either ripe or preserved ; but these will be found very beneficial if gradually introduced. Care should be taken that the bread employed is not made from flour of too fine a quality, as it very frequently produces constipation. Undressed meal is decidedly the most wholesome.

No operations are more necessary to be performed by the vegetable-eater than due mastication and insalivation ; for, unless these important processes be attended to, indigestion is almost sure to be the consequence. Chymification commences in the stomach on the surface of each individual fragment of food ; consequently, the smaller the particles into which it is comminuted by the teeth, the sooner it will be digested. The saliva has a considerable influence on farinaceous food ; and the glands which secrete it are large in all herbivorous and frugivorous animals. This fluid is alkaline ; and it is worthy of remark that, when any of the alkalis are taken for the purpose of neutralising morbid acidity of the stomach, the nature of the saliva is entirely changed, and it assumes quite an opposite property. Many, therefore, produce serious mischief by neglecting to employ an antidote supplied by nature, while they officiously substitute artificial preparations. Acidity, heartburn, &c., would frequently be easily removed if the patient would voluntarily excite an increased flow of saliva, and continue to swallow it for a few minutes ; but this would seldom be necessary if proper food were used, and carefully masticated.

Each meal should be completely digested before another is taken ; and a period of repose should always succeed a period of activity. When the sensation of hunger is experienced in less time than six hours after each meal, it may be generally considered as a morbid craving, dependent on imperfect chylification, in consequence of the too frequent ingestion of food interrupting the ventricular and cœcal digestion. The faintness usually experienced by the dyspeptic is only increased by frequent eating, and is most readily removed by fasting.

Moderate exercise in the open air, for the purpose of assisting the various secretions, is another essential requisite for the production and maintenance of good health. None can long neglect this rule with impunity ; but a sedentary life is certainly not so detrimental to those who live on vegetable food, as to those who live on an animal or mixed diet. Unless sufficient oxygen be supplied to the lungs by daily exercise in the open air, the products of decomposition fail to be removed in sufficient quantity for the maintenance of a healthy state ; and the assimilation of new matter is impeded. Without exercise, also, "the contractile power of the heart and large arteries is feebly exerted ; and, though sufficient to carry the blood to the ultimate

tissue, it is nevertheless not strong enough to carry it through with the rapidity necessary for health. The ultimate tissue being thus filled faster than it is emptied, congestion takes place in those delicate and important vessels which compose it, as well as in the large veins, the office of which is to convey the blood from this tissue to the heart. One of the chief conditions of the body, in that general ill state of health usually denominated 'indigestion,' is congestion of blood in the ultimate tissue of our organs—the brain, the lungs, the spinal marrow, the stomach, the ganglionic system, the liver, bowels, and all the organs concerned in the nutrition of the body." When the system, therefore, undebilitated by disease, will admit a good supply of oxygen by muscular exercise, it is the best means of diminishing the amount of venous blood, and (in conjunction with a legitimate supply of proper food) of increasing the amount of arterial blood; and, in proportion as the latter preponderates over the former, shall we possess health and muscular strength, as well as elasticity of mind.

"Oxygen," says Mr. E. Johnson, "is the only stimulating drink which we can take with advantage to ourselves, for the purpose of invigorating our strength and elevating our animal spirits. It is the wine and spirit of life—the true *eau de vie*; with an abundance of which nature has supplied us ready made; and it is the only one proper to man. If you be thirsty, drink water; if low-spirited, drink oxygen; that is to say, take active exercise, during which you inhale it." Violent exercise, however, should be avoided; for, though consistent with health, it renders the processes of decay and renewal too rapid, and hastens the period of old age.

The skin, being a very important excretory organ, should on no consideration be neglected. About thirty ounces of the worn-out materials of the body are said to escape (by insensible perspiration) in twenty-four hours; but the quantity varies with the temperature of the atmosphere, the amount of exercise, and other circumstances. The innumerable pores by which effete matters abounding in carbon and nitrogen are excreted, can perform their function with much greater freedom in the herbivora than in man; because the artificial clothing which the latter is under the necessity of using, in cold climates, prevents free exhalation, and the skin becomes sheathed in an oleaginous compound, which materially checks the necessary process. The consequence is, that the lungs, kidneys, and liver, have additional duty to discharge, which frequently terminates in functional or organic disease. Hence arises the necessity for frequent ablution, in order to preserve the normal condition of the perspiratory pores. The warm-bath, or sponging the whole surface of the body with tepid water, will effectually remove all extraneous matter from the skin; but, as warmth is debilitating, and cold

(when judiciously administered) is a powerful tonic, it is desirable that cold water should be substituted whenever the constitution will permit it. Many who have been extremely liable to coughs, sore throats, &c., have by this means been completely protected against a recurrence of these distressing and dangerous complaints. Nearly all who are not affected with organic disease may bear the cold bath, or cold sponging, in all seasons, with considerable advantage to health; but its daily use will prove injurious if the body be exposed too long to the influence of cold; and, unless a reaction and moisture of the surface be promoted by subsequent muscular exercise, or by friction of the skin with the hand, the hair-glove, or the flesh-brush.

Several other rules for the preservation of health may be here mentioned, such as regular hours, early rising, good ventilation of the sitting and sleeping rooms, avoidance of currents of air, and some others, the importance of which is so generally acknowledged that they require no recommendation. I shall therefore proceed to a brief enumeration of the most valuable articles of human diet for the choice of those who are determined to dispense with the flesh of slaughtered animals.

The most valuable production in this country for the support of human life is undoubtedly wheat. *Triticum vulgare* is supposed to be a native of the hilly parts of Asia, and has been rendered hardy by time and cultivation in more temperate climates. The flour of wheat is capable of being used in a great variety of ways, forming bread, puddings, pies, &c., and is most wholesome when the bran has not been removed by dressing. Wheat also, when boiled and afterwards used with milk, forms a nutritious and wholesome diet.

*Hordeum vulgare*, or barley, is another excellent grain well known to the ancients. It is indigenous in Sicily and Russia, and may be cultivated in much colder countries than wheat. Pearl-barley is made from *hordeum distichon*, or "two-rowed barley." It is excellent in soups, and forms very good puddings when used either alone or mixed with rice.

*Avena sativa*, or the common oat, was found in a wild state by Anson in the island of Juan Fernandez. This grain is frequently used as "grits," or "groats," but it is more commonly ground into a coarse powder called "oatmeal," which is made into cakes and puddings, or boiled with milk or water, or a mixture of both. It forms a very nutritious diet for children, as well as for persons of mature age.

*Oryza sativa*, or rice, is indigenous in India, where it has been cultivated from very remote ages. The Egyptians, Persians, Babylonians, and all the eastern nations, make great use of this grain. "It is the grand material of food on which a hundred millions of the inhabitants of the earth subsist, and, although chiefly confined by nature to the regions included between and



bordering on the tropics, its cultivation is probably more extensive than that of wheat, which the Europeans are wont to consider as the universal staff of life." \* Merat and De Lens state that three-fourths of the inhabitants of the earth are nourished by this grain, which contains about the same amount of nutriment as wheat, but only a small portion of gluten, which induces some to consider this grain inadequate to the full development of muscular fibre. But if (as we have every reason to believe) the nitrogen of the atmosphere plays so important a part in the digestive processes, the objection against rice, maize, potatoes, and other non-azotised articles of diet falls to the ground; and, as we have well-authenticated accounts of strong and muscular men being nourished solely by such diet, they afford additional evidence that there are other sources of nitrogen besides food. Rice is easily digested, and is an excellent article of food for the young and the old, the sick and the healthy. When formed into puddings the addition of one-third of pearl-barley is considered a great improvement.

*Zea mais*, or maize, is another grain of great importance, and of high antiquity. Its culture is said to be more extended than that of wheat, and in Asia, Africa, America, and some parts of Europe, it is one of the principal aliments of the human race; but, as little of it is imported or produced in England, the remarks already made will be sufficient. Several other valuable grains, tubers, and fruits are not noticed for the same reason.

Of tubers the following are the most valuable:—1. *Solanum tuberosum*, or potato. 2. Cassava, from which tapioca is prepared. 3. Salep, which is considered very nutritious, and is procured principally from *Orchis mascula*. 4. Indian arrowroot, from *Maranta arundinacea*. 5. Yams, extensively cultivated in Africa, Asia, and America. 6. Arrachucha, cultivated in South America for its root, which is farinaceous and easy of digestion. 7. Sago, prepared from the pith of sagus farinifera, and other palms. The following succulent roots are also valuable:—1. Turnips. 2. Carrots. 3. Parsnips. 4. Beet. 5. Jerusalem artichokes. We have also various species of the Brassica, as the cabbage, cauliflower, &c., as well as spinach, asparagus, sea-kale, onions, lettuce, celery, radishes, rhubarb, mushrooms, &c. Lettuces and other esculent vegetables should be used seldom and sparingly, and well masticated, because the stomach and alimentary canal of man are not well adapted for the digestion of them.

Fruits. The most abundant fruits in this island are apples, pears, and plums, which, when well masticated, may be freely indulged in by those who refrain from animal food. Apples are now preserved the year round, and, when made into pies,

\* Marsden's "History of Sumatra," p. 65. 1811.

puddings, &c., are an excellent addition to the diet both of the rich and the poor. It is to be regretted that the high price of sugar is so great an obstacle to the more general consumption of this and other fruits produced in this country.\* The other common fruits are cherries, mulberries, gooseberries, currants, brambleberries, bilberries, cranberries, raspberries, and strawberries. Others, requiring more care to bring them to perfection, are in less general use, as grapes, peaches, nectarines, apricots, pineapples, and melons. The most valuable foreign fruits are figs, dates, dried grapes (or raisins), currants, prunes, French plums, oranges, tamarinds, plantains, bananas (or Indian figs), mangos, mangostans, coconuts, and bread-fruit, many of which are imported, at moderate prices, either fresh or preserved. Other vegetable productions are also worthy of notice, as almonds, walnuts, hazel-nuts, chestnuts, sugar, treacle, and honey, the latter being a vegeto-animal production.

Surely the advocate for variety of diet will find the above bill of fare sufficiently ample to satisfy any moderate desires, but all who have habituated themselves to a fruit and farinaceous diet find many changes unnecessary either for health or the most perfect gratification of the palate. At their first and third daily meals they may probably indulge in a few of the fresh or dried fruits which are in season, along with bread, boiled rice, wheat, oatmeal, &c., and, if they need it, a draught of pure cold water. Some will prefer tea, coffee, or chocolate, and, when taken in moderation, and not too hot, they may probably do little injury; but, when taken too strong, or in too large a quantity, they are the frequent source of dyspepsia, palpitation, &c. Dinner may consist of potatoes, rice, omelets, puddings, fruit-pies, cheese-cakes, and a variety of other prepared dishes, which are numerous and fully described in a work entitled, "Vegetable Cookery, by a Lady." When habit has reconciled a person to the change, his enjoyment of this kind of fare will be so complete, his sensations so exquisite, and his health so well established, that he would not exchange his mode of living for any of the more stimulating but less wholesome dishes generally called good, merely because the diet which I have endeavoured to prove better and more natural has not been sufficiently tried.

[\* Written in 1844. A great change is since made.—ED.]





## A P P E N D I X .

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### A.

A VERY remarkable fact relative to the oxen of South America, is recorded by M. Roulin, and is particularly adverted to by M. Geoffroy St. Hillaire, in the report made by him on M. Roulin's Memoir before the Royal Academy of Sciences. In Europe, the milking of cows is continued through the whole period, from the time when they begin to bear calves till they cease to breed. This secretion of milk has become a constant function in the animal economy of the tribe: it has been rendered such by the practice, continued through a long series of generations, of continuing to draw milk long after the period when it would be wanted by the calf. The teats of the cow are larger than in proportion, and the secretion is perpetual. In Columbia the practice of milking cows was laid aside, owing to the great extent of farms and other circumstances. "In a few generations," says M. Roulin, "the natural structure of parts, and withal the natural state of the function, have been restored. The secretion of milk in the cows of this country is only an occasional phenomenon, and contemporary with the actual presence of the calf. If the calf dies, the milk ceases to flow; and it is only by keeping it with its dam by day, that an opportunity of obtaining milk from cows by night can be found." This testimony is important, on account of the proof it affords that the permanent production of milk in the European breeds of cows is a modified function of the animal economy, produced by an artificial habit, continued through several generations.

Two other very important observations made by M. Roulin, in South America, were pointed out by M. Geoffroy St. Hillaire, in his report to the Academy of Sciences. They refer to the fact of the hereditary transmission of habits originally impressed, with

care and art, upon the ancestors. Of this fact I shall adduce other examples in the sequel ; at present I only advert to M. Roulin's observations. The horses bred in the grazing farms on the tableland of the Cordillera, are carefully taught a peculiar pace, which is a sort of running amble. This is not their natural mode of progression, but they are inured to it very early, and the greatest pains are taken to prevent them from moving in any other gait. In this way the acquired habit becomes a second nature. It happens occasionally that such horses, becoming lame, are no longer fit for use ; it is then customary to let them loose, if they happen to be well-grown stallions, into the pasture grounds. It is constantly observed that these horses become the sires of a race to which the ambling pace is natural and requires no teaching. The fact is so well known that such colts have received a particular name : they are termed "aguillilas." The second fact is the development of a new instinct, which (as M. Roulin declares) seems to become hereditary in the breed of dogs found among the borderers on the River Madeleine, which are employed in hunting the pecari. I shall cite the author's own words : " L' adresse du chien consiste à modérer son ardeur ; à ne s'attacher à aucun animal en particulier, mais à tenir toute la troupe en échec, Or, parmi ces chiens, on en voit maintenant qui, la première fois qu'on les amène au bois, savent déjà comment attaquer ; un chien d' une autre espèce se lance tout d' abord, est environné, et (quelle que soit sa force) il est dévoré dans un instant."

It appears that barking is an acquired hereditary instinct. It has become natural to domesticated dogs and young whelps, to learn to bark, even when separated at birth from their parents. It has been conjectured that barking originated in an attempt to imitate the human voice. However that may be, wild dogs do not bark. There are numerous troops of wild dogs in South America, principally in the Pampas. There are also in the Antilles, and in the isles on the coast of Chili, similar breeds. These breeds, in recovering their liberty, have lost the habit of barking. Like other uncultivated breeds of dogs, they only howl. It is known that the two dogs brought to England by Mackenzie, from the western parts of America, could never bark, and continued to utter their habitual howl ; but a whelp bred from them

in Europe learned to bark. It has often been observed that the dogs in the island of Juan Fernandez—the progeny of those which were left there purposely by the Spaniards, before Lord Anson's time, with the design of exterminating the goats—were never known to bark. A curious observation of M. Roulin is, that the cats in South America have, in like manner, lost those "*miaulemens incommodes*," which are so often heard during the hours of night in many parts of Europe.\*

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B.

ON THE DIET SUITED TO A LITHIC ACID PATIENT. (PAGE 70.)

CAREFUL analyses were made of the urine from two persons, A and B; the former having lived, during several years, on an exclusively vegetable diet; the latter temperately on a mixed diet, excepting five days previously to the first experiment, when he purposely took a much larger portion of animal food than usual. Both had refrained, during a long period, from fermented and distilled liquors. The uric acid and urea obtained from the urine of twenty-four hours was as follows:—

A.—1·3	grains of Uric Acid,	and	181·29	grains of Urea.
B.—8·0	do.		323·6	do.

Nine months afterwards, the experiment was repeated on the 14th of April, 1845, without any change of diet, except that A had occasionally taken very small quantities of the diffusible stimulants, and B much less animal food than at the former trial. The proportions were then as follow:—

A.—1·69	grains of Uric Acid,	and	137·53	grains of Urea.
B.—2·19	do.		285·16	do.

Immediately after this experiment, A lived freely during seven days on a mixed diet, taking a large portion of animal food during the same period, and B lived exclusively on a vegetable diet. On the 21st of April, the uric acid and urea were as below:—

A.—3·14	grains of Uric Acid,	and	252·16	grains of Urea.
B.—1·259	do.		157·67	do.

\* Dr. Prichard's Natural History of Man, p. 34.



In the first experiment, the uric acid eliminated in twenty-four hours by A was one-sixth of the quantity eliminated by B, and the urea little more than one-half. In the second experiment, the uric acid was four-fifths, and the urea still about one-half. In the third experiment the proportions were reversed, the urine of A containing  $2\frac{1}{2}$  times the uric acid, and nearly  $1\frac{2}{3}$  of the urea yielded by that of B. As the analyses were made with extreme care, and conducted in precisely the same way, reliance may be placed on their accuracy. The results of these experiments establish two material points: 1. That the urea and uric acid are not derived exclusively from the decomposition of the tissues. 2. That the quantity of each of these important compounds is increased by animal food, and diminished by a fruit and farinaceous diet. The views of Professor Liebig and Dr. Bence Jones upon these points cannot, therefore, be correct; and, if practically applied in the treatment of the lithic acid diathesis, would doubtless be productive of much mischief.

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### C.

THE table given by Mr. Smith as Appendix B is here omitted because the principle on which it rests is now abandoned. Every article ought to be dried before it is weighed; thus, an ounce of *dry* cabbage should be compared with an ounce of *dry* beef.

The following paragraphs from Mr. Charles Hunter, extracted from the *Dietetic Reformer*, are important:—

“Till quite a recent date almost all scientific writers upon food based their estimate of its nutritive value upon the proportion of nitrogenous or albuminous matter it contained; the carbonaceous or non-nitrogenous being supposed to be solely used in the production of heat, and to be of no value whatever as a source of muscular power. This opinion, never universally received, has at last, under the pressure of advancing science and the clear opposition of facts, given place to one more in agreement with the numerous facts and discoveries of science for the last ten years, and now the nitrogenous matters are looked upon chiefly as repairers of tissue; and though they also furnish a portion,

yet, in the words of Dr. Frankland, 'the non-nitrogenous constituents of food, such as starch, sugar, fat, &c., are the chief sources of the actual energy, which becomes partially transformed into muscular work.' And again, one of the seven conclusions with which he sums up his admirable lecture upon the source of muscular power, reads thus: 'After the supply of sufficient albumenised matters in the food of man to provide for the necessary renewal of the tissues, the best materials for the production of both internal and external work are non-nitrogenous matters, such as oil, fat, sugar, starch, gum, &c.'

"Field experiments carried on in various parts of the country, and by the writer on Mr. William Lawson's farm at Blennerhasset, tend to prove flesh-growing wasteful, also as a manure-making process, and destined to fall before increasing knowledge and free-trade in land. The solution of the sewage question (on a dry system), and the application of more science and capital to farming, will prove the grand argument that will convert pork and beef-eating John Bull into a less dyspeptic and more humanised fruit and grain-eater; and, at our agricultural shows, instead of the judges pinching and poking in the swollen sides of puffy swine and asthmatic oxen, they will have to decide upon the less artificial merits of luscious fruits and golden grains.

"Another popular statement is that fruits contain so much water that their value as foods is but small. Dr. Frankland, however, has shown that 10lbs. of apples contain more muscular power than 4lbs. of lean beef, and the latter contains generally 75 per cent of water, and apples 83, or but one-ninth more. Fresenius in the *Ann. Chem. Pharm.* No. CI., page 219, gives two analyses of English rennets; he found .52 and .45 of albumenoids. The average is thus .485, which, calculated at 15.9 per cent of nitrogen, gives 7.52lbs. of nitrogen per acre, just about half that supplied in barley, and nearly twice that supplied in beef. Apples are not the richest in nitrogen of the fruits; grapes and cherries contain nearly twice as much. This, however, is a point of small importance, as the nitrogen theory, as indicated in my paper, is fast going out of fashion. Strawberries I find yield from 3,000 to 15,000lbs. per acre, and almost all the fruits will be found in nature's economy greatly cheaper than any flesh food."

CHARLES D. HUNTER, F.C.S.

## D.

How unblushingly sensual is the argument of our candid opponent, the London *Spectator*, as to the "real point" !—

"It is reported in every direction that the Harvard crew trained on milk, vegetables, and fruit, and great surprise is expressed that they should have been so nearly successful. Their victory certainly would have been a triumph for the teetotallers and the vegetarians ; but, after all, we see little ground for amazement. Half mankind swallows neither alcohol nor meat. A Turkish hammâl would take an English porter and his load on his shoulders and walk away comfortably, and he never drinks anything stronger than coffee ; while a Highland keeper, bred up on milk and oatmeal, will walk most other men down. Meat is good, and alcohol is good, but there is little in meat that does not exist in milk, and alcohol is only good as a whip, enabling the taker to crowd twenty minutes work into ten. We leave the *Lancet* to decide the point, but we see no real reason why a bread-eater should not do all the work of a flesh-eater and suffer less. The *real point* is, with the vegetarian as with the teetotaller, whether he gains enough to repay him for giving up a justifiable pleasure in a world which has so few justifiable pleasures to offer."—*Spectator*.











