Strength and diet : a practical treatise with special regard to the life of nations / by the Hon. R. Russell.

Contributors

Russell, Francis Albert Rollo, 1849-

Publication/Creation

London ; New York [etc.] : Longmans, Green, 1905.

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STRENGTH AND DIET

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STRENGTH

AND

DIET

A PRACTICAL TREATISE
WITH SPECIAL REGARD TO THE
LIFE OF NATIONS

BY THE

HON. R. RUSSELL

LONGMANS, GREEN, & CO
39 PATERNOSTER ROW, LONDON
NEW YORK AND BOMBAY
1905

Galler
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Printed by
MORRISON AND GIBB LIMITED,
Edinburgh.

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"Error seems old, but truth seems a new thing."—CLEMENT OF ALEXANDRIA, 180 A.D.

"There is not a spot on the globe where a man may not be kept in health and vigour by hygiene."—DE CHAUMONT, F.R.S., 1885.

"The preservation of a large peasant population is one of the most indispensable necessities for all the great continental Powers. . . . They are the physical basis of national prosperity."—*Success Among Nations.* EMIL REICH, 1904.

"The Belgians aim, not as we do, at producing £5 worth of hay, but £100 worth of vegetables, to the acre."—Prince KROPOTKIN.

"Between 1881 and 1891 farm labourers decreased in England 173 in 10,000. In the same period insanity increased from 2 to 3 in every 1000."—*Encyclopædia Britannica.*

"In England the decline of the birth-rate since 1876 has been 20 per cent. The birth-rate of the Anglo-Saxon race in Canada, Australia, and New Zealand is low and steadily falling."—HAVELOCK ELLIS.

"This variety of diet is the one [principal] cause of disease."—ANTIPHANES THE PHYSICIAN.

"Degeneration, physical and moral, must be the inevitable result of failure to obey the laws of sound and simple nourishment."—Mrs. HODGKINSON.

"Take care of your digestion, which means brain."—THOMAS HUXLEY, F.R.S.

"This question of food is one of primary importance, far more than education."—Sir JAMES CRICHTON-BROWNE, M.D., F.R.S.

"The study of dietetics should be looked upon as very nearly, if not quite, as important as the study of therapeutics."—*British Medical Journal*, May 21, 1904.

"To lengthen life, shorten meals. Dyspepsia is due, in nine cases out of ten, to too much food, too little exercise."—*Pleasures of Life.* Sir JOHN LUBBOCK, F.R.S.

"The eating of much flesh fills with a multitude of evil diseases."—PORPHYRISES, 233 A.D.

"The misery of the women of the poorer classes is more than doubled by the use of tea."—Sir BENJAMIN W. RICHARDSON, F.R.S.

"Food is the point about which turns the whole problem of degeneracy."—ALFRED EICHHOLZ, M.D., B.C., H.M. Inspector of Schools.

"It is one of the axioms of physiology that the majority of the diseases of mankind are due to, or connected with, perversions of nutrition."—Prof. CHITTENDEN, Ph.D., LL.D., Sc.D.

"It is open to argument whether the whisky bottle or the teapot exercises the more baneful influence."—J. Batty Tuke, M.D., F.R.C.P.

"I have come to the conclusion that more than half the disease that embitters life is due to avoidable errors in diet."—Sir Henry Thompson, M.D., F.R.S.

"The secret of maintaining good health in this country [the Soudan] is to be temperate."—Lord Kitchener.

"I would just as soon take a dose of arsenic as I would of alcohol [for brainwork]."—Thomas Huxley, F.R.S.

"The percentage of insane at Chicago has quadrupled in the last fifty years."—Dr. Podstata, Superintendent of Asylum, Chicago.

"Alcohol costs the loss of an army corps every year in France. Crime, epilepsy, madness, misery, are abundantly produced by it."—M. Georges Berbey.

"We are living on false stimulants, . . . we are learning and even nationalising bad hygienic habits. . . . I am writing as an observing physician who cannot reconcile England's continued greatness with the growing luxury practised by her sons."—A Physician.

"An empire is but little use without an imperial race."—Lord Rosebery.

"The duration of the life of men may be considerably increased. It would be true progress to go back to the simple dishes of our ancestors. . . . Progress would consist in simplifying many sides of the lives of civilised people."—Elie Metchnikoff.

"To be a nation of 'good animals' is the first condition to national prosperity."—Herbert Spencer, F.R.S.

"One day of perfect health ought to convince a man of the bliss of earthly existence."—Anon.

"For, in truth, all our justice, morality, all our thoughts and feelings, derive from three or four primordial necessities, whereof the principal one is food."—Maeterlinck.

"The Eating and Drinking Reformation is at the foundation of all the good that would be produced in society."—Joseph Brotherton, M.P.

"The Church can do no wiser thing than help forward dietetic reform."—*Methodist Weekly.*

"No one can rise to the higher developments of the soul who does not regulate his life in accordance with the strictest hygienic rules and correct educational principles. . . . Among the first factors in the practice of such religion stands a well regulated diet."—Dr. Reich, of Zürich.

PREFACE

In a small book, published early in 1904, dealing with the fundamental conditions for physical vigour, the following conclusions, among others, were arrived at in relation to the diet and well-being of nations :—

That man thrives on almost any kind of diet common to a nation, the general conditions being favourable ;

That both races and individuals living entirely or chiefly on plant food, or on plant food with the addition of eggs and milk, are stronger and happier, other things being equal, than races and individuals living chiefly on the flesh of beasts ;

That frugal persons and nations live better and longer than others, and are more free from disorders of body and mind.*

The present volume gives in detail the evidence on which these conclusions were based. The question of

* See note, p. 621.

food may have seemed to occupy undue space, but its importance in the present stage of civilisation can hardly be doubted by anybody who has studied the matter at all. Moreover, it is a subject of combined prejudice and semi-scientific error with the majority, unlike that of fresh air, or of exercise, and requires full elucidation. No book of this scope exists.

On the ground of health alone, it will be observed that I have a decided bias towards a diet which excludes flesh, but this bias is the result, and not the preliminary, of investigation and experience.

The far-reaching benefits which would accrue to a civilised, progressive, and non-fatalistic race from a temperate and humane way of living have greatly impressed me, and indeed it seems probable that such a race will in future ages be the inheritor of the earth.

Note.—In a work dealing with a host of quotations derived from many sources, and some of them from fugitive papers or periodicals, I can hardly expect that insignificant errors will not occur, though much trouble has been taken in verification. For all defects of construction which may be found, I am wholly responsible.

The numbers (small figures) attached to quotations, or to paragraphs conveying the sense of passages which have been abbreviated, refer to Notes which will be found at the end of the volume. The Notes are separately and consecutively numbered for each Chapter.

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INTRODUCTION

THERE is a saying: "Happy the nation that is without a history." Happy, too, is the community that thrives and knows not how or why. The means of subsistence is not a lofty subject of contemplation.

"Diet! What does it matter? We can do well on almost anything"—that is the natural feeling of a prosperous organism. There is a healthy disregard of dishes, and it is a satisfaction to take what comes, like the air we breathe, without troubling about it.

But even the air we breathe must give us thought in present conditions and with present knowledge. The lungs protest against what it carries, in the smoky town, in the factory, the dusty mine, the ill-ventilated office, tenement, hall, church, or railway-car; and full breathing brings enemies within the gates. In crowded towns the nose-breathers will be best fitted to survive; the full-breathers are laid low. Only in the country, on the mountain, and on the sea may we breathe freely and deeply the air of pure vitality.

In the matter of food, although a great deal too much anxious thought is given to it, we inflict upon ourselves many disabilities.

Experience of the real causes of suffering in this epoch and in industrial countries creates a conviction of the necessity of reform. The environment of the modern is artificial, and he cannot live unconcerned with habits which, though maybe formerly innocuous, do now, in the narrow space and nervous throng, cause enfeeblement to the family and peril to the nation.

Events are occurring in the Far East which deserve the most attentive estimation of Europe, and a prudent recollection of that mighty Oriental torrent which once overran Russia and conquered Christian lands up to the borders of Austria and Italy. We are too apt to despise unaggressive, unwarlike, agricultural people, spread over a wide territory, who, however, on sufficient provocation, can, with training and expert leaders, become as dashing as the French under Napoleon, as well-ordered and stubborn as the Ironsides of Cromwell. There is a power in the East which, compelled by Western aggression, as foolish as it is unjust, on its territory, may in days to come rouse itself into expansive energy, and surpass the irruption of Jenghiz Khan. Strength and intelligence will be the chief factors, *sub divo*, in establishing the nation of the future upon a basis as secure as may be.

A generous population, accustomed to a country life, deriving, like Antæus, vigour from contact with the soil, and relying on a diet physiologically proper for physical edification, will be the chief element of strength, intelligence, and endurance in the future nation. Nothing is more certain in history than that luxury and the dissipation following the access of ill-used riches is a main cause of the fall of empires.

Country life, with a fair distribution of land as the rightful property of the people born to the nation, is a good security against the perils which always beset capital cities, and threaten the existence of States growing old under the subtle corruption of plutocracy.

In this connection the question of food may seem a small one, but a glance at the passages following the title-page of this volume will serve to dispel that prejudice. The question of food is a matter of special importance to nations in the position of Great Britain, where wealth has rapidly increased and the majority of the population have recently become dwellers in towns, without adequate knowledge of physical laws. At the same time, we must confess that without a religious spirit of personal reform and progress a change in merely physical conditions would be of little value. The fact is that temperance, frugality, right living, and religion are all more or less concerned with the care of the physical nature, and that the whole subject is as much allied to spiritual as to material causes.

It is true that many races live almost equally well on very different staples, and that a national diet, fixed for many generations, is likely to be a good one by itself for the endurance of a people. It is also true that most of us individually may well despise fastidiousness.

When owing to a slight excess in drink, and the consequent incapacity, a battleship with 600 men is lost during peaceful evolutions, or a town swept away by a burst reservoir, or a forest devastated

by fire, we realise the value of temperance in the responsible persons.

But scientific inquiry, and even common observation, has led to discoveries which bring into consciousness a whole series of disastrous ills, perpetually and widely operating, due to mistaken habits which now prevail in everyday eating and drinking. Unquestionable evidence will be adduced in support of this proposition.

We must remember that a very important part of the present daily diet is new to the human constitution, and artificially prepared; that the increase of opulence within a century has enabled millions to add very largely to the variety and richness of their fare; that instead of meals being got and cooked at home they are now manufactured on an immense scale in slaughter-houses, factories, bakeries, and brewing and bottling houses; that the use of preservatives, adulterants, alcoholics, narcotics, and stimulants has increased beyond all precedent; that the exertion of tilling or hunting for one's own sustenance has ceased to be necessary; that activity of brain has largely superseded activity of body; that, in England at least, the majority are townsmen; that sedentary pursuits and confined air have replaced outdoor occupations and the free atmosphere; and, finally, that not only biological discovery, but true sentiment and reasoned ethics, cast a new light on the ways of living by which the coming race may be led to the highest prosperity.

There is no worthier object of endeavour than the bodily and spiritual health of the race. Religion and politics both have this for their aim, though

both have their path obscured with a thousand by-objects and with sectional interests of a selfish sort. The eclectic philosopher, Greek or English, may despise consideration for the everyday triviality of food and drink. He may tell mankind to be content with a tub, like Diogenes, and then leave mankind alone, or he may luxuriate in high art and refined speculation, and, unmoved, let the people perish in their foolishness, with a comforting reflection of the survival of the fit. The ultra-Christian may rely on a text, rightly valued in its high purport, about not labouring for the food that perishes, and giving no care for the body, what to eat, to drink, what to be clothed withal. But the true philosopher and the true Christian will try to join the forces of science and of religion in raising the whole of life to a surer happiness, in seeking and saving the lost, in healing the sick, in promoting comfort, in honouring virtue, in exposing vanity, luxury, and falsehood, in protecting children from destructive evils, in giving the highest efficiency to human powers. He will never forget that body and mind react upon each other, and ought to be friends in wise co-operation, not quarrellers dissipating energy through discord.

Education has neglected the training of each child, each future parent, in the most important elements of its sound growth as a member of the commonwealth. Let the child by all means be taught its letters, its numbers, and its maps, but let it on no account leave school and grow up to manhood or womanhood without an adequate, concise course of instruction on the means by which its own strength and value, and the life and value of its children, may

best be maintained. The efficiency of the physical constitution, the rearing of children hardy, robust, unaffected, reasonable, humane, really means the better ability to attain every sort of learning and accomplish every sort of work. Health teaching might well be considered as a preceding stage to higher education, but, at any rate, it should be a concurrent endowment at all stages, and should aim at some proof of a competent understanding of life conditions before the young venturers sail out into the open world.

Elementary education is intended to teach the use of instruments for attaining knowledge and wisdom. But the physical efficiency of the user of instruments, more important still, because fundamental, receives little attention. The workman may have excellent tools, but what if his arm lacks strength, his vision lacks clearness, his frame vigour, and his mind tenacity? One such, here or there, may do well, but the nation that allows many of its children to grow up without robustness will soon fall behind.

Now let us look at certain facts, and see whether this matter of mere food is really despicable.

It has been proved that about 40 per cent. of the deaths of infants in Great Britain are due to bad feeding. At least 100,000 children under five years of age die every year in these islands, who might easily be saved.

Efforts to provide a pure and uninfected milk-supply in New York during the last ten years, with the aid of a stringent law for keeping the milk cool, have succeeded in reducing the death-

rate of children under five from 96·6 to 31·7 per thousand.

Experiments in improved milk-supply in some English towns have led to results similar to those of New York.

An experiment with three babies, two of which were hand-fed, and one breast-fed, showed, after eleven weeks, an increase of weight in the hand-fed children of 25 and 33 per cent., and in the breast-fed child of 84 per cent. Under ordinary conditions, with the interruption of growth owing to microbic diseases or bad feeding, the difference might easily have been still larger.[1]

"It is one of the indications of the degeneracy that prevails, that the capacity for maternal nursing amongst women of the cultured classes (and others) is steadily decreasing."[2]

And, according to a distinguished authority, the subject of the diminishing birth-rate is of so great importance to the British Empire, that, "if the nation could see it in its true proportion, it would be found to dwarf all other questions of the day."[3]

"The birth-rate throughout the whole of the West is diminishing, while that of the East (Russia, Japan, etc.) is expanding."

The percentage of yearly loss in the years 1894–8 is shown to be greater in England than in the other countries of Europe. The number of marriages does not seem to have declined. In Australia the decline is still more rapid, and the birth-rate is now far below that of any European nation.

At the same time, "juvenile criminalism," according to Brähms, "is on the increase"; and in his

tables, England shows a higher percentage of criminals under twenty than any other European country examined. There may be some reassuring explanation of this, but at anyrate there is no cause for satisfaction.

The Report of the Commissioners in Lunacy of 1903 shows that there were of lunatics, idiots, and persons of unsound mind, per 10,000 persons, 23·93 in 1869, 27·54 in 1879, 30·58 in 1894, 32·96 in 1899, 34·14 in 1903. The ratio of admissions to asylums, etc., has rapidly increased within the last few years—1899, 4·94; 1900, 5·02; 1901, 5·28; 1902, 5·76. Here, too, there may be explanations, but no satisfaction.

The arrests for drunkenness in London were for 1885–9, 4·33 per thousand people; in 1897, 7·35.

The Report of the Registrar-General for 1902, quite recently issued, records the deaths of 2,784 persons from alcoholism or delirium tremens. The rates, both for men and women, were above the decennial average. A very large number of diseases are also, in many cases, induced by excessive drink, which cannot be tabulated as owing to this cause; and the mortality is by "no means adequately" represented. Among these diseases, neuritis, peritonitis, dropsy, tuberculosis, and cirrhosis of the liver may be named. This last, "far from having shared in the general fall of mortality" of recent years, "has actually increased in fatality," among males by 40 per cent., among females by 55 per cent., since 1873–7.

The deaths ascribed to cancer, or malignant disease, in 1902 numbered 27,872, and exceeded by 2,384 the

average number (corrected) in the previous ten years. The male rate (crude) was 696 per million, the highest on record; the female rate was 985, the highest, in conjunction with the previous year, on record. At each of the six age-groups under thirty-five, the registered mortality is "increasing, and that not slowly." The increase of cancer mortality was, however, greatest at the more advanced ages, among both men and women.

There is generally an optimist side to all such statistics, and investigations may fail to show an absolute proof of increase in lunacy, cancer, alcoholism, etc., but we cannot doubt the gravity of the actual facts. It is better to make for regeneration, whether degeneration be or be not proven, than to let indubitable evils accumulate.

"The human race is ill, . . . and the world, which is a paradise, but by men converted into a hospital, is seen and judged through the eyes of an invalid." [4]

Mr. Karl Pearson, from a careful study of the inheritance by children of the mental and moral, as well as the physical characters of the progenitors, concludes: "The reason for the deficiency is that the mentally better stock in the nation is not reproducing itself at the same rate as of old,—the less able and the less energetic are the more fertile. . . . For the last forty years the intellectual classes of the nation, enervated by wealth, or by love of pleasure, or following an erroneous standard of life, have ceased to give in due proportion the men wanted to carry on the overgrowing work of the Empire."

Either the children born are weaker and more neurotic than formerly, or the proportion of the young

recruited from the lower, and from the more vicious strata of society, is dangerously augmented. "The conclusion is, in any case, one of the utmost gravity."

In France, from 1881 to 1896, the number of prisoners before the tribunals has risen from 210,000 to 240,000; since 1889, in seven years, the cases of manslaughter have risen from 156 to 189, of murder from 195 to 218, and of sexual crime from 539 to 651.

During the last fifty years, criminality has trebled itself, though the population has hardly increased at all. Child and youth criminality has very rapidly increased. To-day, child criminality is nearly double that of adults, and the crimes are of a specially serious kind, marked by bragging and exaggerated ferocity. [Much of the increase is owing to the increased consumption of alcohol, and its effect on offspring.]

In 1830 the suicides were 5, in 1892 they were 24 in 100,000. In 1887 the suicides of children under sixteen were 55, in 1896 they were 87, and between the ages of sixteen and twenty-one the suicides were 375.

Since 1880, the consumption of alcoholic drink in France has trebled, and France has passed from the seventh place, in the order of consumption, to the first, according to Mr. Yoxall, M.P.

Since 1880, the number of suicides has doubled. In the United States the increase of crime has followed a course somewhat similar.[5]

"When we recognise," says Dr. Taylor, "that the whole force of modern civilisation, its honour paid to riches, its luxury, its frivolity, its impatience, its society, its manner of life, its very 'neurasthenia,'

seems all more or less opposed to the cultivation of that true family life which is its best safeguard against decay, one needs, indeed, to temper judgment with a quick apprehension of all the difficulties encountered by every modern wife and mother, and to recognise the almost insurmountable obstacles for the Church, the State, and the profession of medicine slowly to overcome. . . ."[3]

It is by no means a law of nature that ancient kingdoms or peoples must decay. "Japan," says a native of that country, "is in no danger of race-suicide. The mothers are not shirking maternity as in other lands."

The Hebrews, according to Dr. Taylor, are healthy and sound in their regard for marriage and the bearing of families; the artificial limitation of offspring is not practised, and they seem to live not individually but racially among the people with whom they dwell. They show no sign of real decay.

The outlook for the Western nations, on the contrary, is most serious.

In the course of a recent address, Dr. Taylor cited the following sentences from Ruskin, and observed that no truer words were ever said:—"The maximum of life can only be reached by the maximum of virtue." "There is no wealth but life." "The final outcome and consummation of all wealth is [should be] in the producing of as many as possible full-breathed, bright-eyed, and happy-hearted human creatures." We might well add the conclusion of Socrates: "Then virtue is the health and beauty and well-being of the soul." "And good practices lead to virtue, and evil practices to vice."

The testimony of Sir James Crichton-Browne is very much to the same effect as that of Dr. Taylor.

In New York, three out of four children of cultured women must be fed artificially. Six months of maternal nursing is quite an exception. At the same time, cancer of the breast is apparently increasing, and women employed in factories, unable to nurse their children, become prematurely aged.

If all children were fed at the breast, as they ought to be, three-fourths of the now prodigious infant mortality would cease.

Of the 150,000 infants who die in the first year of life in this country, only one-fourth have been fed at the mother's breast. In France the mortality of artificially fed children is 61, and of breast-fed 8 per cent. Dr. Hope of Liverpool finds that fifteen times as many artificially fed infants die under three months, as of infants fed on breast-milk.

Rickets, essentially a disease of impaired nutrition, is present in some degree in 50 to 80 per cent. of all the children passed under review at the clinic of the London hospitals. In 1882 the deaths attributed to rickets in England and Wales were 493, in 1901 they were 1,384, or 42 against the previous 19 per million.

"But this does not nearly represent the general worsening of health due to rickets."

"Innumerable infants are gorged to death and fed with utterly unfit materials. Whelks, porter, tinned salmon, gin, walnuts, whisky, cheese, lemonade, are among the substances given by foolish parents, who slay more children than Herod."[6]

Dr. Robert Hutchison, as a result of his investigations, concludes that "an immense amount of harm

is done" by the indiscriminate use of condensed milks. Babies fed on them may look fat and well, but the fatness produced by the sugar is deceptive, and these babies are often subject to rickets and other ailments.

The best system of artificial feeding is by the scientific treatment and graduation of cow's milk. The nutrition of infants is a root question in public health, and the sanitary authorities ought, besides instructing parents by lectures and house-to-house visits, to distribute leaflets broadcast, treating of the preparation and storage of infants' food.

In Liverpool 4,453 infants were supplied with milk at the depot of the Corporation; although they were of various ages and below the average in health, the death-rate was only 78 per 1,000, against 159 for the whole city.

For older children, a good and ample milk supply is very important. Dr. Ferguson, a factory inspector, has shown by careful measurements that factory children between thirteen and sixteen grow nearly four times as fast on milk for breakfast and supper, as on tea and coffee.

According to Sir William Anson, a very large number of school children are defectively nourished. The children in an ill-fed school are almost immeasurably inferior to the children of a well-fed school in the gain from teaching. Bread and weak tea form the sole sustenance of many children for long periods. [This is a most scandalous fact.] The blood is impoverished, and has enough to do to keep the vital processes going; it can spare nothing for reconstruction and enlargement. "These half-starved children want blood, and we offer them a little brain polish." "Each child,"

says Sir James Crichton-Browne, "ought to have two pints of new milk daily."

In an instructive account of a visit paid by him to a school for 208 boys in South London, he relates that 25 were in a thoroughly sound and vigorous condition, 69 in fair condition, 45 in poor, and 65 in very poor condition; 112 suffered from habitual headaches, 76 from disturbed sleep or sleepwalking, 97 had decayed teeth, 16 were short-sighted, 40 had frequent bleeding of the nose. In 79 cases the food was ample, in 49 fair, in 80 meagre, and of these 38 were semi-starved; milk was an unknown quantity except as imparting an occasional cloudiness to tea. Milk is to sanitation, he maintains, what elementary education is to education generally.

Similar testimony comes from almost all quarters of the United Kingdom. The Report of the Royal Commission on Physical Training (Scotland) in 1902, and the Report of the Committee on Physical Deterioration, just issued, contain most valuable evidence of the extent and character of existing deficiencies. The Scotch Committee found 70 per cent. of the children at certain elementary schools to be more or less diseased, and more than 30 per cent. owed their ailments to under-feeding. Out of 1,200 children examined in Edinburgh and Aberdeen, 29·83 and 9 per cent. respectively were badly nourished. In Edinburgh, 18·5 had diseased glands, 52·54 had something wrong about the throat or nose. Sir John Gorst described these reports as "the most appalling he had ever read."

The bearing of the cited facts on the training of the race and on national efficiency is obvious. "Good

food," as a rising statesman recently declared, "must be the foundation of physical training." It is not only the heavy child mortality, but the general weakening of the men and women who have survived the infantile diseases inseparable from neglect, that must urge us to reform, as a nation. Public and private care will make abler citizens for the stress of the coming time.

In a paper[7] read last May before the Childhood Society, Dr. Shuttleworth said that the restriction of the marriage of the unfit is of prime importance, but a difficult problem; ante-natal care is desirable; maternal nursing instead of bottle-feeding a duty wherever practicable; that school methods should be brought into harmony with physiological principles; that growing children should be protected from over-strain, mental or physical, and conditions of life rendered as favourable as possible by sanitary homes, sanitary schools, etc., and, where needful, by supplying nutriment.

It is a curious condition to which a semi-rational progress has brought us, that most parents are unfitted to bring up their children, so that either a full course of State teaching, or even, in many cases, the removal of young children from their control, becomes necessary for the saving of life. It comes to this, that if the children of crowded areas were left to the nature of their parents, they would mostly not survive. The environment, to give them a good chance, must be sensibly artificial, or else more like that of primitive tribes, whose instincts guided them to survival.

"Protection of infant life," in the opinion of a qualified man, Dr. Helyack,[8] "is essential to national prosperity."

"We have to face gloomy facts: the birth-rate is steadily falling; the infant death-rate is excessively high; and we are breeding at an alarming rate those who, from weakness of body or mind, are unfitted to play a useful part in the upbuilding of the State."

The births registered in 1900 were [then] at the lowest rate on record. The death-rate of infants ranged from 79 in Rutlandshire and 91 in Dorsetshire, to 178 in Staffordshire, 179 in the East Riding, 180 in Lancashire, and 236 in Preston. Even those towns with the lowest rates are very much worse than the counties with low rates.

"The addiction of women to habits of excessive alcoholic indulgence has become a matter for national concern. In very many ways alcoholic habits in the parents, and particularly in the mother, are particularly prejudicial to healthy infant development."

In the discussion which followed, Miss Zannetti stated that parents gave their children beer, bacon, potatoes, and cheese, instead of milk, and were also fond of dosing them with opium. Mr. Wethersole cited the case of Munich, where the death-rate among breast-fed was 15, against 85 among bottle-fed children. During the cotton famine, and during the siege of Paris, there was a great saving of infant life owing to the necessity of natural feeding.

In Berlin, in 1891, according to Dr. Legge,[9] M.D., D.P.H., the percentage of deaths among breast-fed infants was 18·46, among animal-milk fed, 47·77, and with a mixed diet, 52·37.

In a paper[10] read before the Sanitary Institute of Great Britain, Dr. Harris, medical officer for Sunderland, contended that "the great curse of infantile life seems to be the ardent desire of parents and nurses to behold their infants taking solid food." In his experience, "a child *one month* old at death had been fed on Neave's food for three weeks previously; another had been given suet puddings, potatoes, and 'everything the same as the parents'; another was fed on raw eggs and milk. . . . Teething rarely causes death. Personally I have never seen a case of which I could positively affirm, 'teething caused this death.'" According to the Registrar-General for Scotland, about 1880, "if the English mortality were reduced to the Scotch standard, 17,000 lives would be saved annually in England." In Scotland, as a rule, no spoon food was given to a child within nine months of its birth. Suffocation—that is, excluding fresh air by covering up the child with clothes, etc.—causes over 1,000 deaths annually. Ventilation reduced the number of infants dying in the Rotunda Hospital at Dublin from 3,000 to 530.

In Sir Douglas Galton's inaugural address to the Institute in 1882, he mentioned that in the Northern Counties Orphan Asylum, the children were singularly free, during the eighteen years of its existence, from children's disorders. Each child had a pint of new milk every day. During three months they had received weak tea, and only half the previous allowance of milk; the number of children who were unwell increased beyond what it had been for years, but fell again when the pint of milk was restored.

At the same meeting Miss Yates lamented the

disuse of the home-made bread which had been the principal support of the English people for hundreds of years. "The bread they have adopted is one from which a large portion of the flesh-forming, and nearly all the bone-forming, materials have been extracted." This is a serious matter for the strength of the nation. Professor Church states that in 100 lb. of white flour there is only half a pound of bone-forming material, while 100 lb. of whole meal contains 2 lb. Dr. Edward Smith advised that whole meal should be used, but finely ground; and Dr. de Chaumont recommended the removal of the outer siliceous husk of the grain.

In a letter to the *Times*, the Dean of Ripon quoted Mr. Schooling's estimate that the birth-rate in England has declined both actually and relatively more than in France since 1875, and that the decline has been more rapid than in any European country.

In an article in the *Independent Review* for November 1903, Mr. Havelock Ellis states that "in the United States, in Canada, in Australia, not only is the birth-rate of the purely Anglo-Saxon elements of the population constantly sinking, but the other racial elements in these lands do not follow the same tendency," so that the English are losing, the non-English gaining, in British territory. In fecundity the Russians are now at the head; the Austrians, especially the Magyars, approach them; later come Italians, English, and French. The Germans are far ahead of the English.

In a paper by Dr. T. Lister on "Infant Feeding,"[11] he stated that the birth-rate is falling in nearly all European countries, and that the fall in England in the last twenty-five years was from 35·4 to 28·7.

"One might say that it will not always be a race merely for wealth and armaments, but eventually for life itself." Every year 160,000 children are born in this country to die before twelve months have passed. It is not known yet to the general public that a very large part of this mortality is the result of improper and foolish feeding. This mortality from food is 35 to 45 per cent. in most of our English towns, without counting many cases in which food was indirectly concerned. About three-fourths occur in artificially fed infants. Of artificially fed infants 80 per cent. suffer from disorders of digestion, of nursed infants 25 per cent. In France the mortality of breast-fed is 8 per cent., of milk-fed 20 per cent., and of otherwise fed infants 41 per cent.[12] In Sweden and Norway, where nearly all children are fed naturally, the mortality is 10 to 13; in Lower Bavaria, where artificial feeding is general, the rate is nearly 50 per cent.

Artificial feeding, properly and scientifically controlled, may, however, be made very much safer than at present.

Dr. Variot has during eight years distributed sterilised milk to over 1500 infants; there was no case of scurvy or rickets among those where the milk was properly used. In St. Helens and Battersea the milk supplied by the municipalities appears to reduce the mortality of infants by more than one-third.

The adulteration with preservatives is particularly harmful to young children.

Milk is subject to many sorts of dangerous contamination on its way from the cow to the consumer. Dr. Klein has shown that the germs of typhoid, diphtheria, scarlet fever, and tuberculosis, all grow in milk

in favourable circumstances. Dr. Ernest Hart and others traced a large number of local epidemics to milk.

Unless milk is kept cold, the increase of its germ population is almost inexpressible in figures. The systematic cooling of milk, wherever practised, has prevented a very large amount of disease and mortality. In present conditions, milk should be heated to 180 degrees, or boiled before use, but in future we may hope for the protection of milk from the moment it leaves the cow. Milk is more nutritious without boiling or sterilisation, and children fed on boiled milk should receive 25 per cent. extra.

Speaking of tuberculosis produced by the milk of tuberculous cows, Sir William Broadbent said that "the diseases of bones and joints to which children are subject are probably also traceable to milk: hump-back, hip-joint disease, and the diseases of knees, elbows, etc., which cripple so many children." [Tainted milk does not, of course, account for all such cases; the condition of the homes is a very notable cause.]

Mr. Brittlebank has stated:[13] "As far as my experience takes me, the milk trade is in a filthy condition." The horrible contaminations to which milk is subject, the number of risks to the consumer, the frequent adulteration, the additions of flavouring and colouring matters, and the poorness of quality, are far from being commonly realised." In one bad example of milk, Mr. Brittlebank found, after eight hours, a proportion of about 124,000,000 bacteria to the cubic centimetre. Mr. J. S. Lloyd, of Sheffield, remarked that in some country places the cowsheds

were "simply abominable," and other members of the Institute were of the same opinion.

Dr. Harvey Hilliard, who has given much attention to this subject, considers that "the vitality and the future of the nation depend on the health and vigour of the infants of to-day."[14] . . . The source of an infant's health and strength is, of course, the nourishment with which it is provided; the future of succeeding generations depends, therefore, on the food of the babies of the present day.

Milk carefully adapted to the child is the one satisfactory food for a young infant. Rich and highly nutritious food may be given, yet the infant will starve, owing to its inability to digest it. Human milk is the best, but when this is not available, cow's milk, obtained from only the most carefully guarded dairies and cowsheds, should be used, with every possible precaution against the numerous sources of mischief which may infect or spoil it between the cowshed and the nursery. "Few people realise the amount of dirt that gets into the milk." The milk should be filtered through several layers of sterilised gauze, and cooled before its despatch to market. The bottle and its temperature should be objects of constant attention. Generally, the strength of the milk should be gradually increased, for healthy children, up to about the ninth or tenth month, when whole milk may be given.

"People who have worked among the poor and have treated babies dying of inanition know that the answer to the question, 'And what do you feed the baby on?' will probably be, that the baby has whatever they have themselves—sometimes beer included! Is it surprising, then, that out of 1,000 infants born in these crowded

areas 393 die in their first year; and is it other than to be expected that those who do survive are ill-developed, shallow-chested, puny and unfit specimens to be allowed to carry on the race? Is it a wonder that our asylums and hospitals for consumption are overcrowded, and our other charitable institutions for the halt, the lame, and the blind filled to overflowing, or that so many are 'born tired'? . . . An enormous amount of good can be done by the establishment of municipal crèches in crowded areas."

Dr. Thomas D. Lister, assistant physician to the Royal Waterloo Hospital for Children and Women, etc., has given his testimony,[15] that he has come to the conviction that "the need for infants' milk depots exists in every centre of high infantile mortality."

Miss Marion Elliston, in a recent article, deplores the careless extravagance of the poor towards their children. "There are so many of those marasmic babies—not starved by having no food, but by being fed on food which does not feed them,—cold cabbage, sardines, cheese, tea, beer, and all kinds of mixtures. When the mothers bring them to us like this, and when the doctor asks what the child has been fed on, they say, most indignantly and reproachfully, 'Just whatever we have ourselves, sir.'" Similar experience is very common among the poor, and forms a tremendous impeachment of our whole intelligence and our whole educational routine as a nation. "In many districts it is quite impossible for poor mothers to obtain a supply of milk that is pure and always the same." This is infamous, and infamous, too, is the fact that in

most towns the milk sold is poor, adulterated, preservatived, dirty, and dangerous.

In *Poverty: A Study of Town Life*, Mr. Rowntree describes the children as very frequently underfed, largely owing to the adulteration of milk and the bad quality of the bread.

Professor Atwater, of the United States Department of Agriculture, among many other interesting statements in the *Year-Book* of 1901, writes that the hygienic economy requires that the food shall not only meet the physiological demands in respect to the quantities of nutriment and energy, but also that it shall be fitted to the digestive powers and other physiological peculiarities of the users; this is especially important for invalids and young children. So we may observe for ourselves, both the children of the poor, who are underfed, and the boys at some public schools, who are overfed with flesh three times a day, are unhealthy.

The medical officer for Southwark[16] considers that about 50 per cent. of the deaths of infants there are due to improper feeding. The deaths under one year have averaged one-quarter of the total mortality. Handsheets have been prepared, and these are now left at the houses of the poor by lady inspectors. In 1900 the mortality was 192, in 1901 it was 168, and in 1902 it was 166. Of the total mortality, about one in every seven deaths is due to consumption.

Sir James Crichton-Browne has written: "Could a generous and wholesome dietary be provided for all the children of the poor, one-half of the disease, pauperism, and crime that now burden the country would have disappeared by the next generation."

Dr. Kerr, medical officer of the London School Board, is of opinion[17] that there is no room for the further deterioration of London children, else London will, by the end of the twentieth century, be peopled by neurotic weaklings.

"Mr. Charles Booth and Mr. Rowntree have shown that we have about 30 per cent. of our population (of cities) receiving 25 per cent. less food than is proved scientifically to be needed for physical efficiency." [The results attained by these investigators are open to criticism, which detracts somewhat from their significance. Mrs. Bosanquet, Mr. Loch, and others have contributed interesting papers putting the earnings and nutriment of the poorest class higher than the York estimate. Further, scientific proof is forthcoming that the minimum of nutriment per head required is considerably less than has been hitherto stated in treatises on the subject.] In York, 51·6 of the poorest children, 18·8 of the middle, and 11·4 of the best fed, were "bad" in physical condition. The weight of the poorest was 11 lb. less than the average, the height $3\frac{1}{2}$ in. less. Of Jewish children, 17 per cent. were rickety; of Gentile, 45. Of Jewish children, 27 had bad teeth; of Gentile, 51. The Jewish girls were much taller and heavier than the Gentile. The Jewish mother studies the diet of her children, giving milk, eggs, whole meal, butter, oil, fish, etc.

Compare this with the common dietary of our poor — the extravagant unwholesomeness, — and the differences between Jewish and English growth are accounted for. Bread, butter, and tea, with a little

bacon, fried fish, or bestial entrails, are quite insufficient; the bread, which might go a long way in supporting life, is defective in quality, deprived of some of the most useful constituents of the grain.

"It has been estimated that about ten millions of people in the United Kingdom are underfed."[18] But, if they are underfed, it is not so much from poverty, as from ignorance and the wrong choice of foods. The wasteful expenditure, even of the poorest, is deplorable.

On the other hand, we have the strongest medical testimony of the prevalence of over-eating. In Dr. Bell's opinion, "there are more deaths and greater bodily suffering due to overfeeding than to all the diseases put together."[19] Similarly, Dr. Robertson Wallace declares[20] that a vastly greater number of persons in the Empire die of over-eating than of starvation. India must be excluded, I think, from this estimate. Whole masses of men, he says, suffer from perfectly avoidable disorders, which could be prevented or cured by temperance in diet. Among these disorders he names gout and so-called rheumatism, poisoning of the nervous system, eczema, kidney and pulmonary troubles, many cases of bronchitis and pleurisy.

Dyspepsia, says Lord Avebury, is due, in nine cases out of ten, to too much food, too little exercise.

More than half the disease that embitters life, Sir Henry Thompson concluded, is due to avoidable errors in diet.

Dr. Combe's observation deserves more general appreciation than it receives: "Health is more frequently undermined by the gradual operation of

constant, though unperceived, causes, than by any great and marked exposures of an accidental kind."

It is quite clear that only a small minority have any proper knowledge of elementary facts in physiology and in hygiene, especially in relation to the feeding, not only of their children, but of themselves.

Great Britain has rapidly increased in riches. Since 1872 the population has increased nearly one-third; pauperism has diminished one-half; and the home and foreign trade has more than doubled in volume, and is at least two and a half times as profitable. The earnings of the people have increased from £34 to £43 per head; the purchasing power from 34 to 64 per head, compared with 1872. [This was, however, a year of high prices.] The purchasing power is, roughly, one-third greater than it was forty years ago.[21]

Yet the increase which might have been expected in the health and strength of the people is not found to have taken place. On the contrary, in some large divisions of the country, and, in some respects, in the country as a whole, the condition has changed much for the worse. The causes of deterioration, or of failure to improve, are mainly three—Oppidanism, with all that it implies; excessive or improper food; and alcoholism. Education has not been of the kind to counteract adequately the evil influence at work.

A statistical analysis by Mr. Francis Galton[22] of the details of one thousand town families and one thousand country families, selected from the town of Coventry and the adjacent rural population, showed that the town population supplied to the next generation only three-quarters of the number of adults

supplied by the equally numerous country population, and that in two generations the adult grandchildren of artisan townsfolk were little more than half as numerous as those of labouring people who lived in healthy country districts. In large, closely built centres of population the ratio would probably be increased considerably against the town population; and Coventry is by no means one of the worst of what may be called congested areas.

Dr. Morgan's paper on "The Deterioration of Races in Great Cities" showed that of the adult population of London 53 per cent., of Birmingham 49 per cent., of Manchester 50 per cent., and of Liverpool 62 per cent., were immigrants from the country settled in the town.

It follows that the deterioration of quality, and the decline in the birth-rate, closely succeeds the immigration to towns.

The Germans in large towns appear to be similarly degenerating.[23] Only 54 per cent. of the young men called up for army service are found physically fit. Heart disease has "increased by 300 per cent." Dr. Archer has given the following as the causes of deterioration:—Excessive indulgence in alcoholic drinks at an early age, the necessity for boys to work beyond their powers in the lower classes, and systematic insufficiency of nourishment. The fitness of the Berlin people for military service has fallen continuously and seriously since 1893 from 43·39 per cent. to 31·74 per cent. in 1899, and 32 in 1900. In the province of Brandenburg, outside Berlin, the proportions were 53·04 in 1896, 53·51 in 1900; in agricultural East Prussia, 66·49 in 1896, 66·27 in 1900.

In France, as in England, alcoholism has increased with increased riches, and is considered to be now most alarming.[24] Consumption, which ought to diminish with more abundant food, has also increased. It kills about 150,000 every year; in Paris, in the poorest quarter, nearly 11 per 1000 die every year; in the richest quarter 1 in 1000.[25] In Paris 149 per 1000 live in unhealthy dwellings; 363 per 1000 in dwellings badly overcrowded. Consumption is sadly prevalent in the army: "Our young recruits," says one authority, "are the most robust of our population; their food is good and abundant, their barracks are roomy, they pass a great part of their time in the open air; yet, in the French army, the percentage of deaths from consumption is eleven times greater than it is in civil life." Professional athletes, he says, are peculiarly liable to consumption. No doubt, dirty habits account for a very large proportion of the mortality in these classes, and alcoholism, contagious disease, etc., have their share, but the number of the young, strong, and well-nourished who are attacked is, in any case, remarkable.

Professor Jordan, in a recent article, has insisted on the fact that "all great cities are destroyers of life," and has related how the most intelligent and ambitious of the French peasantry yearn to seek a fortune in Paris, there, in many cases, to fall into various miseries, and end in absinthe and the Morgue. The survival of the fittest is, he says, the primal cause of race progress, the survival of the unfittest the primary cause of the downfall of nations; but "the child is free-born," and "almost everything can be accomplished by time and patience."

I think he is right in this opinion, which is held by many other physiologists, and believe that, in the future, the primacy of the world will belong to those races which are most temperate and which are well distributed on the land or in open cities, sensibly educated, and reasonably unaggressive. There are, however, times which are critical and decisive.

The survival of the unfit, and the rapid decline or extinction of the fit, have reached threatening proportions in Great Britain and North America. The strain of modern life tells mainly on the best, and these best are continually being sacrificed and replaced by fresh comers. Indoor occupations instead of outdoor, excessive stimulants, narcotics, competition, worry, and the absence of rest and quiet contemplation, have wrought havoc with the human constitution.

Mr. Havelock Ellis, in his book on *The Distribution of British Ability*, dismisses London as a locality from which men of great distinction and ability arise. "London as a birthplace has been ignored altogether. When the facts are available, it is nearly always found that the parents had migrated to London; we may reasonably assume that this is probably the case when the facts are not available. It very rarely occurs that one grandparent belonged to London." If this be true of London, something of the same sort must happen in other large urban communities. And the ill effects must be immeasurably more far-reaching than the mere extinction of great men; they must include the enfeebling of the powers of the mass of men and women within their borders. Yet the cities are composed of the best stock of the country. From nearly all parts of England, says Mr. Rider Haggard,

in his valuable book on Rural England, the abler labourers and young men of various classes leave the country and settle in the towns. "The intelligent leave the land."

Dr. H. Campbell, who has deeply studied the subject in connection with the causation of disease, goes so far as to say [26] that in the poorer classes the family never passes beyond the third generation of slum born and bred. If you get a third generation at all, it is ill-formed, and "on the high road to racial extinction." The seal of fate is stamped upon the true Londoners, and they are "a painfully deteriorated type of humanity." The environment is "totally different from that in which the human race was evolved."

If we think of it, the situation is hardly a possible one for the production of a healthy body or mind. The crowded room, the filthy street, the poor and adulterated milk, the devitalised air, the unlovely sights and sounds, the careless or dissipated or ill-instructed parents, the absence of almost everything that is beautiful and wholesome in nature for the building of the child, — these cannot allow a sturdy growth.

"It is probable," says Dr. Campbell, "that all occupations which necessitate prolonged confinement from a tender age upwards are necessarily fatal, and certainly all those are which prevent the enjoyment of *fresh* air and proper bodily exercise from time to time."

The necessity of fresh air we may take as an axiom, settled and incontrovertible. It is a food of the body which cannot be dispensed with, and much

more, for it carries off carbon from the lungs, and in doing so creates heat. Yet it remains unappreciated with the mass of our elementary-educated people.

The conclusion must be that the close-built streets of a big town are totally unfit for the right development of children, and that, for their sake and for racial health, country surroundings or roomy towns with garden spaces for every house are indispensable.

But it does not follow that conditions in the country will anyhow be fit or tolerable for the upbringing of a strong people. Overcrowding in some parts of rural England is equal to that of some of the worst slums, and insanitary cottages, with a bad water-supply, are quite common. In most parts the young married labourer has great difficulty in obtaining a cottage at all, owing to the fact that the land is devoted to game or pasture; moreover, the cost of building and the senseless exotic bye-laws are prohibitive of profitable cottage-building. The custom is to build a labourer's cottage rather for charity than profit, and most disastrous it is. Every small house built for the labourer becomes a tax instead of a source of income, as it ought to be, for the landlord. The rent of a cottage and the labourer's wages are both too low. Usually the landlord builds a few show cottages and no more. The construction of small houses should be as cheap as possible. In many cases the materials might be provided, with which the labourer might build his own dwelling, as in Ireland, and a paying rent ought to be charged for the house with, say, half an acre or an acre attached to it.

Both in France and in England the evil of alcoholism decimates the rural population. The

peasant proprietors of France are at least as fatally subject to this weakness as the dependent labourers of our own country.

The diet question is worthy of the attention of all patriotic citizens on account of alcohol alone. The Western nations may some day find that, in order to contend with rising powers in the Far East, it will be necessary to cultivate the sobriety and intelligence which contribute so conspicuously to the success of a nation under arms. The prospect for Europe in this respect alone is sufficiently grave to justify the calling of an International Congress to promote the emancipation of the West from the ever-increasing oppression of intemperance.

Lord Shaftesbury, who for about fifty years acted as a Commissioner in Lunacy, stated before a Select Committee in 1859 his opinion that half the lunatics in English asylums were there through drink. Later, in 1877, he stated to a Parliamentary Commission that he believed intemperance to be the cause of fully two-thirds of the insanity that prevailed either in drunkards themselves or in their children. That estimate was probably too high.

A great deal of expert evidence gives something between one-third and a half as the proportion who have been made insane by alcoholic habits in Europe; but it must be remembered that the ancestral influence cannot be traced in many additional cases which indirectly follow the abuse.

It is well known that the children of drunkards are often weak minded, imbecile, or diseased. Very many are weak in will, deficient in healthy blood and tissue; very many are born without the proper stamina or

capacity, and go to swell the degraded multitudes of congested towns. I remember what I suppose may be a typical case: the parents were fairly intelligent, but both drunkards; the children were all imbecile.

I have kept a very insufficient record of reported crimes due to drink for three weeks, and this showed a number of most atrocious murders and assaults, often on the same day, besides many suicides. To murder wife or children after being on the drink is quite an ordinary thing, and the horrible neglect, often fatal, of children by drunken mothers is too common to notice.

As to crime resulting from alcoholic drink, the testimony of judges is abundant and conclusive. Mr. Justice Hawkins stated in 1877 that 75 per cent. was due to drink. Mr. Justice Denman had on one occasion to try thirty-six prisoners charged with offences of violence, of which six were murder; all these were directly attributable to liquor. Baron Huddleston found almost all of forty-four cases due to excess; Baron Dowse found drink at the bottom of almost every crime; Sheriff Smith, of Dundee, found it to cause most of the misery and nine-tenths of the crime among the poor; Mr. Horsley, the prison chaplain, declared that if drinking customs were to cease all the metropolitan prisons except Pentonville might be closed; Lord Chief-Justice Coleridge said that if we could make England sober we might shut up nine-tenths of the prisons. Mr. Chamberlain, on 1st January 1874, said that but for the drink "we should see our taxes reduced by millions sterling," and "our jails and workhouses empty," while more lives would be saved in a year than were destroyed in a century. Sir

William Harcourt asserted that "strong drink lies at the root of all the crime, and more deeply than any other cause affects the happiness and well-being of the people." Mr. Gladstone described the evils of alcoholic liquor as exceeding all the evils of war, pestilence, and famine.

Clearly this branch alone of the diet question is not a trivial affair.

What a grand addition to the resources and trade of the country would be the £140,000,000 now worse than wasted every year! What an increase of house-room, furniture, comforts, industrial and agricultural prosperity would result! and what an increase of physical and mental efficiency, again resulting in augmented prosperity!

The actual amount spent on intoxicating liquors in the United Kingdom in 1903 is given in the appended table,[27] but for purposes of comparison of national gain and loss a deduction of thirty or forty millions must be made for the proportion of the amount paid for taxation, licences, etc. Of course a much larger sum might, on the other hand, be added for loss of health, efficiency, and time, for jails, workhouses, asylums, police, etc.

Cost per head.

	Spirits.		Beer.		Wine.		Other Liquors.	Total.		
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*d.*	£	*s.*	*d.*
England .	23	9½	56	0	6	4¾	10	4	7	0
Scotland .	42	11	16	6½	5	5¾	2¾	3	5	0
Ireland .	27	4	34	5½	2	10	2½	3	4	10

The total average per head was £4, 2s. 4d. An average family of five spends £20, 11s. 8d., or 8s. a

week, on liquor. Excluding women, children, and abstainers, the drinkers spend £7, 9s. 8d. per head. A grown up family of five, all alcohol drinkers, spends £39, 8s. 4d. per annum. The pure alcohol consumed is about 89,646,519 gallons. The total liquor bill for 1903 was £174,445,271. This amount is larger than the whole income of all our railways for passengers and goods, the whole cost of our public education, including the universities, and the whole income of all clergy and ministers together. It is equal to the whole rental of all the ordinary dwellings of artisans and labourers in town and country.

The Report of the Interdepartmental Committee on Physical Deterioration shows that the late Inspector-General of Recruiting and the Director-General of the Army Medical Department attributed the alarming figures, which have been largely quoted in the press as showing physical deterioration, rather to the inferior class of men now drawn to the recruiting centres than to any widespread falling off in physique.

They reported further to the following effect :— Factory children of factory parents compare unfavourably with others, and the rate of mortality, especially of infants, is unduly high in factory districts.

The urban population is now 77 per cent. of the whole ; fifty years ago it was just over 50 per cent. But " urban " merely signifies districts with an urban organisation, and includes many small towns which are as healthy as rural districts.

Of all the agencies to produce the survival of the fittest, disease is the worst, for the injury to those that survive is so great that all measures which combat disease tend to improve the race.

Urbanisation has been attended by three evil consequences considered in the report—pollution of the air, overcrowding, and bad conditions of employment.

According to Dr. Eichholz the children frequenting the poorer schools of London and the large towns show "a most serious condition of affairs, calling for ameliorative and arrestive measures, the most impressive features being the apathy of parents as regards the school, the lack of parental care of children, the poor physique, power of endurance, and educational attainments of the children." In the better town districts there are schools frequented by children equal or superior in physique and attainments to country children. There is reason "to anticipate rapid amelioration of physique so soon as improvement occurs in external conditions, — particularly as regards food, clothing, overcrowding, cleanliness, drunkenness, and the spread of common practical knowledge of home management."

The rapid falling off in physique of girls going from school to work is accounted for by the conditions under which they work, rest, and feed.

"Lunacy," according to evidence, "increases with the rise of wages and the greater spending power of the operative class; a falling wage rate is associated with a decrease of drunkenness, crime, and lunacy."

The Committee think that, with a view of setting a term to the immense evils of overcrowding and consequent degeneration, after a given date the local authority should notify that no one-roomed, two-roomed, or three-roomed tenements would be allowed to contain more than two, four, or six [grown up?] persons respectively.

A system of "zones" or "lungs," consisting of unbuilt-on spaces about towns, is recommended, and air-ways of sufficient breadth, avenues, towards the centre of large towns.

"The close connection between a craving for drink and bad housing, bad feeding, and polluted and depressing atmosphere, long hours of work, . . . is too self-evident to need demonstration."

Dr. Scott puts alcohol first among the "influences that retard improvement." Mrs. Mackenzie expressed the general view, when she said that if the drink question were removed three-fourths of the difficulty, and the poverty and degradation altogether, would go along with it. "People who have not enough food turn to drink to satisfy their cravings."

Over-drinking and drunkenness among women was found to be certainly increasing, with consequences "extremely prejudicial" to the offspring. Liquor clubs are common among girls at the potteries and in factories.

Dr. Eccles stated that "if the mother as well as the father is given to drink, the progeny will deteriorate in every way, and the future of the race is imperilled."

From certain insurance tables, it appears that of 61,215 men between 25 and 65, 1000 die in one year, but of 61,215 publicans, 1642 die in one year, while of Rechabite abstainers, only 560 die. The greater vitality of the temperate is shown by the fact that out of 100,000 persons of the general population, 44,000 would reach the age of 70, but of abstainers over 55,000.

In summing up the influences of alcoholism, Dr. Robert Jones states: "Alcohol perverts the moral nature, affects the judgment, and impairs the memory;

it, moreover, especially affects the mental system, and creates an enormous loss to the community through destroying the productiveness of the skilled craftsman."

"Forty-two per cent. of all periodic inebriates relate a history of either drink, insanity, or epilepsy, in their ancestors."

Food.—As regards food proper, the Committee noted a striking consensus of opinion as to the effects of the character and amount of foods in determining physique, and *this factor was acknowledged by every witness to be prominent among the causes to which degenerative tendencies might be assigned.*

In former times, said Dr. Purdon, children lived on oatmeal and buttermilk and potatoes, but the town children now live on tea, white bread, and jam. Similarly Dr. Robert Hutchison, who has great knowledge of the subject, said, "If I were asked to state the chief fault in the diet of the working classes of this country, I should say it is the excessive use of tea and bread." The money spent on tea *might with much greater profit be spent on other things.* And it produces much anæmia and neurosis. Dr. Hutchison would like to see porridge and milk in the place of bread and jam. The Bishop of Ross said the Irish peasantry have come to regard bread and tea as a higher and better class of food than potatoes or porridge and milk, and "this mistaken idea grows more obdurate every day."

Evidence from Manchester states that a fruitful and little suspected cause of deterioration lies in the habit of tea-drinking at breakfast and other times in the factories and foundries. A strong mixture or stew

of tea is drunk four or five times a day by hundreds of young people, causing varicocele and other serious evils. The chief recruiting officer in Manchester rejected a very large number of young men on account of ailments due to tea-drinking.

Dr. Hawkes found in Finsbury that the women and girls drank three or four pints of tea poison in the day, and their solid meals often consisted of pickles and vinegar. An enormous amount of dyspepsia is thus set up, often finally leading to alcoholism for relief. Many stint themselves terribly in order to afford more expense in personal adornment.

Tinned food has to a very large extent replaced fresh, and is even largely consumed in the country, where milk and fruit ought to be available.

The question of infant feeding is dealt with, and to the same intent as we have already noticed. The Committee are informed by the highest authority, that modified cow's milk is by far the best alternative to breast feeding. Of the cause of the loss of breast-milk in highly civilised people, "the medical profession are in ignorance." Even in Ireland suckling "is fast dying out." In both English and Irish country districts, however, it is still not uncommon. Tinned milk as a substitute is condemned, on account of its expensiveness and the way in which it is used, but not if used with proper understanding. At Liverpool, for every death from diarrhœa among breast-fed, there were 22 among infants fed artificially.

Farms from which milk is sent to towns are often exceedingly filthy, and when it reaches the consumer it is badly contaminated. The cows are most filthy when milked, the milkers are dirty, their vessels are dirty.

The cowsheds are in many cases badly ventilated and drained, and are overcrowded. In one London district, 52 per cent. of the milk shops were found to have one or more sanitary defects, and 73 per cent. of the milk vendors failed to keep their milk protected from dust. Of 25 milks examined in Finsbury in 1903, 32 per cent. contained pus, and 40 per cent. contained dirt.

Milk on leaving the cow should at once be reduced to 40 degrees, kept cool, and transmitted straight to the consumer, who should be instructed how to keep it in a safe condition.

"Food," said Dr. Eichholz, "is the point about which turns the whole problem of degeneracy."

He estimates the number of underfed children in the London schools at 122,000. At one school he considered that 90 per cent. were unable to work properly owing to underfeeding. Other important witnesses give the proportion at much less.

Mr. Dolamore, on behalf of the British Dental Association, expressed himself as having no doubt that bad teeth are a condition of the feeding that accompanies high civilisation. There is no ground, however, apparently for associating dental degeneracy necessarily with progressive physical degeneration, and the richer classes in respect of teeth are among the worst.

In the opinion of the Director-General of the Army Medical Service, "were all classes of the community able to provide their offspring with ample food and air-space, a healthy race would be produced."

The Committee recommend national instruction in schools on the care of health, including the demonstration of the physical evils caused by alcoholic drinking. The report deserves the most careful study.

Much as some of us may wish to dismiss the subject of food from discussion (and I agree with these), we cannot but recognise that in the present state of the world wrong habits of eating and drinking are responsible for an immense dissemination of pain in a great variety of diseases; a very large increase in afflictions of the nerves, the internal organs, and the brain; a mass of preventible poverty, misery, and crime; and a very general absence of that condition of abounding vitality which constitutes a chief element in happiness.

It is one thing to care little about food and drink, in the sense of being satisfied with simple fare of a wholesome sort; it is another thing to be careless as to the effects of various unnatural foods on the body and on the high qualities of a race, to be apathetic to the awful human sufferings caused by unfit articles of consumption, and to tolerate, *pari passu*, an inferno of suffering in the passage of harmless fellow-creatures to the slaughter.

There are large populations which do not develop stamina approaching that of which, with proper food, they are found to be capable, and the efficiency of these can be greatly raised by a mere change in the quality and quantity of the aliment. In highly civilised communities the natural instinct which rejects meat and drink of a destructive character becomes blunted, so that personal choice and taste turn traitors, and whole races of the finest people of the world lose in a few generations much of their pre-eminence, and tend to extinction. The man or woman, especially in the most progressive communities and in the most intellectual classes, is frequently a victim of some

disease which greatly impairs body or mind, owing to the habitual fare having contained some substance which has acted like a slow poison on the system, never allowing it full vigour, or stimulating it to a dangerously accumulated robustness, to be knocked suddenly to pieces by illness. The loss of efficiency to the community, and of happiness to the subjects of these undermining ingesta, would make inquiry into the subject of diet desirable on this ground alone.

The public, however, is far from realising the importance of both quality and quantity in ordinary diet. There are thousands of well-to-do people, including very many, no doubt, among legislators and councillors, who only laugh at the idea suggested of damage by the daily dram taken to counteract a "sinking" sensation, or to precede or finish a meal, or else by the daily feast which costs enough to support a family for a month. The advertisements of specific cures for internal ills which everywhere disfigure town and country, and hit us from the pages of newspapers, signify the existence of an appalling amount of unnecessary disease, and an equally appalling ignorance, which flies to impostures for temporary relief, and never alters the habits which permanently incapacitate the protecting organs of the insulted body.

Well qualified observers have computed that in civilised countries like England and the United States, fully half the prevalent illness is the result of mistakes in diet, including drink. It is certain that, if we may judge by the condition of previous and contemporary plain-living people, a very large proportion of the cases of malignant disease and of insanity would not occur with a reasonable diet.

According to statistics, these disorders are rapidly increasing in civilised countries. At least 25 per cent. of cases of mental dislocation are attributed by medical authorities to the direct and indirect effects of alcohol alone, and of this the consumption has rapidly increased, especially among women.

A medical man has given the following list of disorders in which digestion is concerned, and which are therefore more or less dependent on the character of the nutriment supplied to the long-enduring stomach :—Acidity, narcomania, biliousness, bladder, kidney, and brain troubles; impure blood, nervous tremblings, etc.; cancer, stomach catarrh, consumption (alcoholic), coughs of many kinds, cramp, depression, eczema, fainting fits, gastritis, diseased liver, gout, gravel, headache, heart troubles of various kinds, hypochondria, hysteria, stoppage of bowels, jaundice, lumbago, lung troubles, neuralgia, noises in the ears, drunkard's paralysis, piles, rheumatism, sleeplessness, shingles, decayed teeth, dyspepsia, and uræmia.

This list sounds exaggerated, but it falls short of the reality. Add to these the hundreds of thousands whose days are depressed and whose nights are broken, but who ought to be fully enjoying life.

Anyone who has grasped the truth that, of all the painful cases of the sick, of the suffering, of the wrecks of health and strength, of children badly developed, deficient in intelligence, vigour, and joy, of victims to alcohol and other stimulants, or to narcotics, of persons breaking down with frequent bodily miseries, and of early deaths, a very large proportion would not have come to pass if the national habits had been based on sense and frugality, with a

little scientific contrivance,—such an one cannot look unmoved at the stupendous errors now destroying families, bringing heavy sorrow to thousands, and involving, if continued, the fall of a great people.

Close aggregation destroys healthy ways of living. Compared with the big town, menaces that call forth armies are negligible; compared with excess in stimulants, arsenic and strychnine are of little account as poisons. Whole tribes have been swept away by liquor, whom hardship and famine had little affected. Nations have gone down under luxury and self-indulgence, who could hardly have been conquered in a field of battle.

The faces seen at the factory door, and in the quarters of crowded labour, indicate a condition far removed from the sound enjoyment of life in countries where luxury and degraded poverty are both unknown. The hospitals of the industrial city are crowded with patients who never learnt the first rules in the art or science of living. Half of the wages of multitudes of workers is spent on means of rapid or slow self-destruction. A host exceeding half the population of London begs every year for aid at the London hospitals and dispensaries. The total number of in- and out-patients at the London hospitals a few years ago was as 1 to 4 of the inhabitants; in 1902, the proportion was very nearly 1 to 2. The actual number of patients was 2,098,905, an appalling register, when every allowance is made; 44 per cent. of these were surgical cases, 31 medical, 25 were of children and special diseases. I suppose that in a healthy country district the proportion formerly would hardly have been 1 in 20 or 1 in 30,

and in a normal right-living population it should be much less. Mr. Sydney Holland stated in 1903 that the London Hospital had, in 1902, of in-patients 13,160, of out-patients 162,147, equal to 66½ miles of people standing side by side.

I shall adduce ample evidence to prove that a very large portion of these victims are brought to illness by their own failings in regard to alimentation.

The needless wrecking of health is not confined to the poor and uneducated, but extends to the rich, and very conspicuously to the highest in intellect, for their sufferings and loss of efficiency are most severe. Many of the greatest brain workers have undergone inexpressible trials from lack of adjustment in the matter of diet. De Quincey was utterly prostrated with "nervous horror," "deranged liver," "incapacity for food," and lost "all power of thinking at all." Carlyle had "nameless struggles and miseries," "dyspepsia like a rat gnawing," moods "tragical, gloomy, weary, dispirited, sick"; he was "all palpitating, fluttered with sleeplessness"; these attacks were long-continued, and terribly spoilt a great part of his life. Darwin spoke of "not one whole day without my stomach greatly disordered, and most days great prostration of health," "wretched digestive organs," "life a burden," and for the greatest part of his life he was obliged to remain much in retirement owing to such troubles. Huxley endured great depression and want of energy, and described himself as "in for lifelong dyspepsia." After being "worried almost to death," at last, by greatly reducing his diet, and cutting off alcohol and tobacco, freeing himself, as he expresses it, from "gross intemperance," he became as vigorous as ever he was in his

life. Robert Browning suffered at one time from " a state of nervous prostration and physical apathy." Herbert Spencer was perforce an invalid during a large part of his life, painfully sensitive and subject to disorders of the digestion and nerves.[28]

Such heavy troubles of original workers did not, I think, much affect the great men of early times, or those who lived with unusual frugality, like Benjamin Franklin. They belong to the time of excitant foods and drinks, the time of flesh, strong tea, sedentary pursuits, and many distractions, of which, perhaps, news and business letters coming daily are not the least.

It has been proved by the experience of athletes, and of leaders of men during great crises, when they had need of all their energies, that by care and frugality in diet they are enabled to bear the stress of conflict with equanimity. Probably the men of intellect above quoted had not found the appropriate training and diet for the due exercise of their mental task, else they would have escaped the greater part of their distress. Mental as well as physical efficiency is dependent on the proportion and quality of the ingesta, and on the avoidance of poisonous matter which accumulates, especially in the body unpurified by oxygen and exercise.

Alimentation is clearly a subject of national concern. Armies and navies are now pretty well provided with a scientific dietary, and the heavy mortality which formerly accompanied the provision of improper food is not likely to occur again, except by accident. It is equally desirable, in the long-run, that the population which supplies army, navy, and all the industrial

strength of the empire with raw material should be raised to a high level of efficiency.

A general dissemination of sound teaching on the properties of food, on food values, and on the fitness of certain dietaries for the sustenance of health, will do a very great deal for the prevention of disabling illness in all classes of the community. Like other reforms touching personal habits, it is difficult to apply, and prejudice is so strong that the victim can seldom be persuaded of error without a violent demonstration from his own constitution. But gradual changes do take place in the community which lead to a healthier environment, and the degeneration, or, at anyrate, unsatisfactory physical condition, of a great mass of the population is beginning to be so widely realised that physical culture will take a much more prominent place in the education of the future.

A recent editorial article of the *British Medical Journal*[29] observes that "the quantity and quality of the food daily consumed plays such a large part in the maintenance of health, and in the treatment of disease, that it is rather remarkable that closer attention has not been paid to this important question. . . . The study of dietetics should be looked upon as very nearly, if not quite, as important as the study of therapeutics."

Sir James Crichton-Browne, M.D., F.R.S., states: "This question of food is one of primary importance, far more so than education."

A discourse of Socrates, touching not only on food, but luxury in general, which follows the deviation from frugal living, reveals his strongly held conviction that luxurious habits lead to disease, war, and "almost all the evils in states, public and private."[30]

The experiences of eminent workers, relating to errors in matters of diet, are repeated to some degree in millions of their fellow-countrymen. The well-being of a nation is, after all, dependent on the vigour of its component parts; and Huxley's saying, already quoted, that care for the digestion means care for the brain, has the most important bearing on national efficiency.

The general intelligence and the success of the Japanese people, who are described as "the most vegetarian race on earth,"[31] cannot but be connected with their abstemious habits. Travellers in rural China are almost unanimous in laying emphasis on the extraordinary physical capacity and endurance of her people. In some respects they are crude, senseless, and obstinately conservative, but they have the physical basis of success. The majority are landholders.

Pasteur has declared that man has the power to banish infectious diseases from the face of the earth, and De Chaumont that there is not a spot on the globe where a man may not be kept in health and vigour by hygiene. Ignorance, lack of will, and fatalism meanwhile keep us in bonds.

These opinions are weighty, and they are confirmed by everyday and common observation, but at the same time they are not generally appreciated.

Even among members of the medical profession, the part played by diet in health and disease is only rarely much studied or rated at its proper value.

Parents are most lamentably ignorant of the effect of various foods, drinks, and adulterants in continual use, and have the power, which very few exercise, of

greatly increasing the strength and well-being of their children by simplifying their meals.

Many books exist, some of them excellent, and the result of prolonged scientific investigation, on the nature of foods, and their chemical composition, on food values, and on the amount of proteid, carbohydrates, etc., which should enter into the diet. In fact, the theoretical investigation of food has been rather fully treated. Books of much value have been written on parts of the subject with great amplitude of detail; many of these I have quoted.

But, so far as I know, and I have searched the British Museum and other libraries, no book has hitherto been published dealing comprehensively with the actual diet of races, nations, communities, and persons, and with health and strength in relation to these. Most books of travel despise the subject.

If the Index of the *Encyclopædia Britannica* be consulted, "strength" will be found to include much information relating to the strength of non-living materials, but no reference to strength of muscle. Tests of the strength of various races on a systematic plan are wanting. I have been quite unable to find anything of the kind, and therefore can only hope that the present volume will go some way towards supplying some part of the deficiency. The actual facts, derived from travellers and others, many of them competent and scientific, do, I think, when seen on a large scale, prove conclusively some propositions of the utmost import.

A very strong tendency prevails among scientific Societies, and the same tendency affects Royal Commissions, public inquiries, and legislation, to

overestimate laboratory experiments or scientific instrumental experiments on a small scale, and to underestimate broadly-extended and long-enduring experiments under natural conditions. We fail to realise that there are going on around us, without premeditation, countless experiments of equal value, at least if they are carefully checked and made use of, to the accurate tests of physiology with every logical aid.

This tendency I have seen often acting rather as a diversion and hindrance to common-sense measures than as a decisive factor in the rapid advancement of a true policy. It is more striking and more inhibitive of progress in the physiological field than in others, but pervades the mental disposition of our time.

A trivial example may illustrate the insecurity of a strict, but not sufficiently conclusive, method of test subjects. For many years suggestions were made that railway carriage doors might, for the convenience of the public, be made with inside handles. The argument against them always assumed the folly of passengers, and the great danger to children and reckless persons who would insist on falling out in a manner distressing to the Company. This theoretical and seemingly well-grounded objection sufficed for a long period. If a course of laboratory experiments, with compartments, some containing children, and some absent-minded or intoxicated persons, had been instituted, probably the danger would have been shown to be very real. If one child opened the door in 100 experiments, we might have calculated that since 10,000,000 children travel in the course of the year, 100,000 children would open the door and fall out on the railways of Great Britain.

But the innovation has been freely tried on a large scale, and what has been the result? Very few accidents of the kind occur in a year; little or no excess is due to these handles, although on many lines most of the cars are provided with them.

Similar groundless fears for a long time actuated railway directors against the provision of alarm signals from compartments to the guard. It was said that trains would be too often pulled up for slight reasons. Experiments on a small scale might have confirmed these fears. It was forgotten that experiments on a large scale were in perpetual evidence, and that nervous old women, or mischievous boys, might easily have tried to stop a train with signals by voice or handkerchief. But they did not, nor do they now needlessly pull the cord.

More important matters have been similarly treated. In several countries, for many years, a few simple rules, of which the chief was the muzzling of dogs, were found sufficient to prevent the worst of all diseases. Yet for many years false arguments were successfully used in England to show that such measures would be cruel and useless. The proofs in favour of muzzling were complete, but could not prevail against mere prejudices and fears.

Similarly the examples of epidemics and of the means of preventing them in many places were not sufficient to convince the authorities of other places, who would not adopt proper precautions till the same experience occurred under their own eyes. They failed to recognise man or nature.

This of course belongs to a very general defect of imagination, and it has been well suggested that

sanitary authorities would act more efficiently at a distance from their own particular locality.

Criticisms from outside, concerning both parishes and nations, would, if attended to, often bring greater benefit to the subject of observation than the happy-go-lucky confidence and arrogant assertions of "the man on the spot." Ignorance of local prejudices seems in many cases to increase the capacity for an able judgment, conducive to reform.

Highly interesting scientific experiments have been made on the action of various foods and drinks on the human organism, and these afford most instructive data. But it is surely a very strange characteristic of our faculties of valuation that almost no attention has been paid to the great natural experiments which have been going on over vast spaces of the earth's surface, through ages of time, in almost every sort of climate and condition, in various races, civilised and uncivilised. These experiments are in reality incomparably superior to any possible local instrumental researches, for they are conducted in the conditions, endlessly varied, of man's ordinary life, and with every circumstance which can test the validity of wide conclusions from wide data. Large natural results from certain natural causes are very commonly unimpressive. The prejudice may be akin to that which in religious bodies in various parts of the world denies any possible salvation to any person outside its communion.

Fifty years ago most men would have required, at the least, definite scientific proof that one could live as well without alcohol as with it. The obvious testimony of millions of men existing in

better health than oneself would have had no effect.

So to this day many of the intellectual and logical, as well as the ignorant, regard a fleshless diet as a fad, or a doubtful experiment, or a matter for scientific experimentation, wholly casting aside, for practical purposes, the facts that the majority of 1,200,000,000 human beings have lived well with little or no sustenance from the flesh of beasts, that in all climates and conditions men thrive on a full and adequate humane diet, and that no laboratory experiments could be so convincing a demonstration of the practicability of that way of life as these multitudinous proofs in varied conditions.

When elementary science becomes a necessary part of education, and scientific faculties are understood as constituting at least as useful, as indispensable, an equipment for life as reading or writing, a new era of advancement will begin. With the admirable movements of reform now acting upon many civilised nations, and the prospect of the rise of a science of sociology, which will affect both legislation and the ordinary ways of life among the multitude, there is reason for hope. When faith declares itself in a common habit of religious consideration for the life of the generations to come, the amelioration of the lot of humanity will be assured.

CHAPTER I

Opinions of Great Naturalists, Physiologists, and Chemists, on the Proper Diet of Man—Animal or Vegetable?

The testimony of Cuvier, in his great work on *The Animal Kingdom*,[1] is as follows: "The natural food of man, judging from his structure, appears to consist of fruits, roots, and the succulent parts of vegetables; his hands offer him every facility for gathering them; his short, but moderately strong jaws, on the one hand, and his canine being equal in length to the remaining teeth, and his tubercular molars, on the other, would allow him neither to feed on grass nor to devour flesh, were these aliments not previously prepared by cooking. Once, however, possessed of fire, and those arts by which he is aided in seizing animals or killing them at a distance, every living being was rendered subvervient to his nourishment, thereby giving him the means of an infinite multiplication of his species.

"The organs of digestion are in conformity with those of manducation; his stomach is simple; his intestinal canal of moderate length, the great intestines well marked, his cæcum short and thick, and augmented by a small appendage, and his liver divided into only two large lobes and one small one; his epiplosa hangs in front of the intestines, and extends into the

pelvis. . . . An evil still more irremediable is the abuse of physical powers: now that man can only injure man, he is continually seeking to do so, and is the only animal upon earth that is for ever at war with his own species. . . . Even civilised nations, far from being contented with their blessings, pour out each others' blood for the prerogatives of pride, or the monopoly of trade."

Sir Richard Owen, in his *Odontography*,[2] wrote: "The apes and monkeys, which man most nearly resembles in his dentition, derive their staple foods from fruits, grain, the kernels of nuts, and other forms in which the most sapid and nutritious tissues of the vegetable kingdom are elaborated; and the close resemblance between the quadrumanous and human dentition shows that man was, from the beginning, more especially adapted to eat of the fruit of the trees of the garden. [This, adds Sir Richard Owen, is the conclusion to which my friend Mr. Bell (afterwards Sir Charles Bell, F.R.S.) has arrived in his physiological observations on *The Natural Food of Man* (1829, p. 33)]. But the quadrumana are not exclusively frugivorous. Some are known to seek the eggs and callow-brood of birds. The African baboons pass whole hours in turning up great stones in quest of insects. The young chimpanzees and orangs in our menageries manifest no repugnance to cooked meat, and the avidity with which they will pluck and devour a sparrow leads us to suspect that their vegetable diet is occasionally varied by the capture of a live bird." He then shows that the formidable canine teeth of orangs and baboons are for *combat and defence*, not for flesh-eating. "The molar teeth are those which form always the best and

sometimes the sole guides to a knowledge of the diet of a mammiferous animal, and these clearly indicate the frugivorous and mixed regimen of the quadhumana and man."

Sir Charles Bell, F.R.S., wrote:[3] "It is, I think, not going too far to say that every fact connected with the human organisation goes to prove that man was originally formed a frugivorous animal. 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."

John Hunter, the great anatomist, concluded:[4] "Man ought therefore to be considered a compound, equally fitted to live upon flesh and upon vegetables."

Linnæus[5] spoke of fruit as the species of food 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."

Gassendi,[6] who was born in 1592, and was a professor of philosophy, a student of anatomy and physiology, insisted that, from physiological reasons, especially the structure of the teeth, man was destined for a food, not of flesh, but of fruits.

The great botanist Ray[7] declared that whatsoever food is necessary to sustain us, whatsoever contributes to delight and refresh us, is supplied and brought forth by plants. "Certainly man was never made to be a carnivorous creature."

The writer of the article "Dietetics," Dr. T. K. Chambers, in the *Encyclopædia Britannica*,[8] said: "The discovery already mentioned of the production of force from the assimilation of starch leads to the knowledge, opposed to old prejudice, but supported

by experience, that the raising of the energies to their full height of usefulness may be effected by vegetable food quite as well as by the more stimulating and more expensive animal nutriment, or by the more rapidly absorbed alcohol."

[In another part (earlier) of the same article, the writer expresses the opinion that "it is absolutely necessary that the fleshly machinery should be continuously replaced by flesh food, as it becomes worn out." This seems to conform to the old view.]

The author of Kirke's *Handbook of Physiology*,[9] which is edited by Morant Baker, says: "The chief ordinary articles of vegetable food contain substances identical in composition with the albumen, fibrine, and caseine, which constitute the principal nutritive materials in animal food. Albumen is abundant in the juices and seeds of nearly all vegetables; the gluten which exists, especially in corn and other seeds of grasses as well as in their juices, is identical in composition with fibrine, and is commonly named vegetable fibrine; and the substance named legumen, which is obtained principally from peas, beans, and other seeds of leguminous plants, and from the potato, is identical with the caseine of milk. All these vegetable substances are, equally with the corresponding animal principles and in the same manner, capable of conversion into blood and tissues; and, like the blood and tissues in both classes of animals, the nitrogenous food of both may be regarded as in essential respects similar. . . . That the final destination of the ternary principles is the same in both cases is almost proved by the ability of man and many other animals to subsist and apparently maintain an identical

composition and uniform temperature with food of either kind."

Sir Benjamin Richardson,[10] the distinguished physiologist, gives the following statement: "Man, although possessing the capacity for existing on an animal diet in whole or in part, is by original caste adapted to a diet of grain and fruit, and, on a scientific adaptation of his natural supplies, might easily be provided with all he can require from that source of subsistence. The vegetable world is incomparable in its efficiency for the supply of food for man, when its resources are thoroughly understood and correctly applied. The supplies of food for man are most economically and safely drawn direct from the vegetable world."

Professor Michael Foster, F.R.S., in the *Text-Book of Physiology*, writes: "Vegetable proteids appear to undergo the same changes in the alimentary canal as do animal proteids, and the main effects, on the body, of proteids from the two sources seem to be the same."

Professor Edmund Parkes, M.D., F.R.S., stated[11] that "the chemical composition of animal and vegetable albuminates is very similar, and they manifestly serve equal purposes in the body. The meat-eater, and the man who lives on corn or peas and rice, are equally well nourished."

Professor Voit, one of the most eminent German physiologists, who has made many important experiments on the food of man, recently declared: "I see no reason why man, with well-chosen vegetable food, need go to the animal kingdom for albuminous matter."[12]

Mr. John Smith, a careful student of the anatomical

and biological character of the body in relation to food, wrote,[13] but more fully than can here be represented, that the present constitution of man, like the original, is best fitted for a diet derived directly from the vegetable kingdom. Keen scent, strong talons, a simple stomach, a short alimentary canal, sharp angular teeth, and a cunning disposition generally mark the carnivorous animal. The canine teeth are long, conical, acute, and strong; there is not the slightest resemblance between these cuspids and the so-called "canine" teeth of man. In the horse, camel, and stag they are pointed and large, much larger than in man; yet it is not contended, as in the case of man, that these beasts should be carnivorous to act up to their dental outfit. The cheek-teeth in the lower jaw of man are, like those of herbivorous and frugivorous animals, simply raised into rounded elevations, and directly opposed to the upper teeth. In the carnivora these lower teeth are shut within the upper, so as to tear and cut flesh. The lateral motion of the jaws in man is like that of the frugivora, and quite unlike the motion up and down in the carnivora. The secretion from the salivary glands, especially in vegetarian races, is in man like that of the herbivora, though the glands are smaller. The stomach is something between that of most carnivora and most herbivora. Again, in the immense number of perspiratory glands of the skin, man differs from carnivora.

Prof. William Lawrence, F.R.S., Professor of Anatomy and Surgery to the Royal College of Surgeons, in his Lectures there, stated "that vegetable diet is as little connected with weakness and cowardice as that of animal matter is with physical force and courage.

That men can be perfectly nourished, and their bodily and mental capabilities be fully developed in any climate by a diet purely vegetable, admits of abundant proof from experience." Animal food, he affirmed, is also "quite consistent with the greatest strength of body and most exalted energy of mind; this truth is proclaimed by the voice of all history."

"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. The obtuse tubercles of the human molars have not the most remote resemblance to the pointed projections of these teeth in carnivorous animals; they are as clearly distinguished from the flat crowns with intermixed enamel of the herbivorous molars. In the freedom of lateral motion, however, the human inferior maxilla more nearly resembles that of the herbivora.

"The teeth and jaws of men are in all respects much more similar to those of monkeys than of any other animals. . . .

"In the proper carnivorous animals, the alimentary canal is very short. . . . Men will be placed on the same line with the monkey race, and will be removed to a considerable distance from the proper carnivora.

"A skull of the orang-utang has the first set of teeth; the number is the same as in man, and the form so closely similar that they might easily be mistaken for human. In most other simiæ the canine teeth are much larger and stronger than in

us. . . . [Yet they are all, on the whole, vegetable feeders.]

"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. [By herbivorous is, no doubt, meant eaters of the products of plants.]

"Man possesses a tolerably large cæcum, and a cellular colon, which, I believe, are not found in any carnivorous animal.

"I do not infer from these circumstances that man is designed by nature to feed on vegetables, or that it would be more advantageous to him to adopt that diet. . . .

"Before venturing to draw any inferences on a subject beset with so many obstacles, it would be necessary to observe the effects of a purely animal and purely vegetable diet on several individuals of different habits, pursuits, and modes of life; to note their state, both bodily and mental; and to learn the condition of two or three generations fed in the same manner." [The results of such experiments, on a large scale, will appear in the present volume.]

In a note, Professor Lawrence mentions an orang-utang which naturally preferred fruit, but on shipboard was induced to eat flesh, and quickly became carnivorous. "At present" (December 1818) "his diet is vegetable, both from his own choice and *because it agrees much best with him.*"

The chief biological testimony to the character of human organs in relation to food may be summed up as follows:—The size and character of the stomach,

colon, intestinal canal, and other organs are like those of the ape, not like those of the carnivora and herbivora. The carnivora have claws, a rasping tongue, pointed molar teeth, small salivary glands, a simple and rounded stomach, a smooth colon, and an intestinal canal three times the length of the body. Man has nails, a smooth tongue, blunt molar teeth, well-developed salivary glands, a stomach with a duodenum, a convoluted colon, and an intestinal canal twelve times the length of the body. Saliva in carnivora is acid, in man alkaline.

Mr. E. B. Tylor, author of *Primitive Culture*, states[14] that Dr. Prichard, who perhaps deserves, more than anyone else, the title of founder of modern anthropology, puts the relation of man, physically, to the lower animals strongly in a passage of his *Natural History of Man*, which he quotes. The following extracts must suffice here:—"The points of resemblance are innumerable; they extend to the most recondite arrangements of that mechanism which maintains instrumentally the physical life of the body, which brings forward its early development, and admits, after a given period, its decay, and by means of which is prepared a succession of similar beings destined to perpetuate the race."

"Among the present generation of naturalists," says Mr. Tylor, "there is an evident tendency to fall in with the opinion that the anatomical differences which separate the gorilla and chimpanzee from man are in some respects less than those which separate these man-like apes from apes lower in the scale. Yet naturalists agree to place both the higher and the lower apes in the same order." Prof. Alfred R.

Wallace places man "apart, as not only the head and culminating point of the grand series of organic nature, but as, in some degree, a new and distinct order of being."

Mr. Thomson, in his *Study of Animal Life*, quoting Sir Richard Owen's assertion of the "all-pervading similitude of structure" between man and the highest apes, says that subsequent research has continued to add corroborating details. Man and gorilla differ less than gorilla and marmoset. "The bodily life of man is like that of monkeys; both are subject to the same diseases; . . . there are about seventy vestigial structures."[15]

Dr. Alfred R. Wallace fully accepts Mr. Darwin's conclusion as to the bodily structure and descent from some common ancestral form, but "a change in essential nature took place, due probably to causes of a higher order than those of the material universe."

In Dr. D. J. Hamilton's view:[16] "Man, like other animals, was naturally intended to lead an outdoor life. He was originally a hunter and tiller of the ground, breathing a pure atmosphere, living on a frugal diet, and exercising his muscles. Wherever these conditions are infringed, his powers of resistance to disease are lessened."

Charles Darwin stated that in ancient times man probably subsisted upon fruit.[17] He has also given an account[18] of his conviction of the close relation, physiologically, of the human body to that of the higher simiæ. "I do not put my trust in any single character, even that of dentition, but I put the greatest faith in resemblances in many parts of the whole organisation. . . . That man is closely allied

to the higher simiæ is shown by the classification of Linnæus, who was so good a judge of affinity. The man who in England knows most about the structure of simiæ, Mr. Mivart, and who is bitterly opposed to my doctrine about the derivation of the mental powers, yet has publicly admitted that I have not put man too close to the higher simiæ, as far as bodily structure is concerned." Now, since it is well proved that the apes do not thrive on flesh food, there is the strongest ground for the presumption that man, similarly formed, is not naturally constructed to maintain himself on the food of a beast of prey. It is not, in fact, surprising that the human being is most efficient with the sustenance which is most natural to him. But Darwin wrote, oddly enough, long after the physiological conditions were familiar to him: "I have always been astonished at the fact that the most extraordinary workers I ever saw, the labourers in the mines of Chili, live exclusively on vegetable food, including many seeds of leguminous plants."

Dr. Gilman Thomson, Professor of Medicine in Cornell University, writes:[19] "Prolonged muscular exercise, or extraordinary exertion, can be maintained upon starchy foods and fat without meat. . . . A man cannot perform more actual muscular labour upon an exclusive diet of animal food than upon starchy food."

"A mixed diet is the only rational one for man. . . . The ox extracts a large proportion of nitrogen from such food (grass), which man's feebler digestive organs do not enable him to do. . . . The lion derives great strength from purely nitrogenous food, but even

when trained he is wholly unfit for the continuous exertion that herbivores can endure. . . .

"Man, from his earliest prehistoric days, has been omnivorous. Animal food in some form must be regarded as absolutely essential for all vigorous races." [This opinion, from the context, seems to signify not that flesh-meat, but some animal products such as milk, butter, cheese, and eggs, are essential. The vegetable oils do not seem to have been taken much into account, though now largely and successfully substituted for animal fat.]

Dr. Combe considers that the true principle in regard to the stomach appears to be that, where the food of the animal contains much nutriment in a small bulk, there the stomach and intestinal canal are simple and short.

Dr. J. J. Bell writes:[20] "In comparing the human teeth with these four classes [the herbivora, carnivora, omnivora, and frugivora], we find in the herbivorous little or no resemblance; in the carnivorous the resemblance is still less, as man has no long, sharp canines resembling the lion and wolf, but short like the other teeth. When compared with the omnivora, the disparity as regards the form and arrangement in the jaw is still greater. But when we compare the teeth of man with the frugivora, as the higher apes, we find them identical in number, in form, in grouping, and in arrangement in the jaw, with the exception that the eye teeth are a little longer and more chisel-shaped in the ape, and are set a little apart from the other teeth."

The motion of the jaws is also quite unlike that of the carnivora, and, like that of the vegetable feeders

threefold. The hands and feet bear similar testimony to the class to which man belongs.

In the carnivora, the alimentary canal is three times the length of the body, in the herbivora thirty times, in the omnivora ten times, in the ape twelve times, in man twelve times.

The colon bears testimony to the same effect; also the situation of the mammary glands; also the sweat glands distributed over the human body, quite unlike the carnivora; also many points in the digestive organs.

In the carnivora the stomach is very simple, and secretes a very powerful, highly acid gastric juice. In the frugivorous animals, and in man, the gastric juice is much weaker, thus allowing digestion of starch to go on for a long time after the food is swallowed.

The liver in carnivora is much larger in proportion to the size of the body, and the secretion of bile very much greater.

Landois and Sterling have shown that uric acid is increased about two or three times above the normal quantity on a flesh diet. And urea is doubled by the use of a flesh diet. Other poisons, such as succinamic acid, creatin, creatinnin, are increased proportionately.

Bouchard has shown that the excreta on a mixed diet are twice as poisonous as on a non-flesh diet, and later experiments give the toxic excreta as increased fourfold on a purely flesh diet.

Meat extracts or beef teas consist largely of products on the way to urea, and are partly toxic.

Dr. Bell cites from *The Scientific American* statistics showing the greater longevity of the less opulent and cultured races. These will appear later.[21]

Dr. Joseph Drzewiecki, late physician in the University Clinic of the Holy Ghost Hospital at Warsaw, writes that nothing speaks so much against a flesh diet for man as his digestive canal, which resembles that of the anthropoid apes very closely. Experience has taught the breeders of apes that flesh makes them wilder, and causes many disorders of the stomach, bowels, kidneys, skin, etc., and, what is more important, shortens their life, so that to-day no breeder of apes or proprietor of a menagerie will feed them with flesh.

The eminent anthropologist, Professor Broca,[22] has shown that the structure and position and covering of the peritoneum over the bowels are the same with man as with the anthropoid apes.

It seems probable that, man's digestive canal being longer, and his liver much smaller than that of the carnivora, " the poisonous alkaloids which are now known by physiologists to be formed in the process of digestion, may get into the liver and blood," and be the cause of many disorders.

Drs. Parkes and Kenwood[23] wrote : " Whilst there is not sufficient evidence to prove that vegetarianism, so-called, is more conducive to health and longevity than a mixed diet, there can be but little doubt that the wealthier classes eat too largely and too frequently of meat. Excess of nitrogenous food causes not only an abnormal production of the poisonous alkaloids, of whose potentialities for evil but little is at present known ; but an excess of nitrogenous waste accumulates in the blood, oxidation is interfered with ; the liver, kidneys, and the other excretory organs are overtaxed in their work of eliminating waste substances

which are also insufficiently elaborated, and gout or liver and kidney disease result.

"The only advantage—if indeed it be one at all—in favour of an animal nitrogenous food as opposed to vegetable, is that the former is more rapidly and completely digested, and therefore more quickly replaces wasted tissue. But against this must be set the fact, quite recently ascertained, that proteid substances are split up in the processes of healthy digestion, either in part or whole, into the poisonous alkaloids, ptomaines, and leucomaines. These bodies tend to accumulate in the system when flesh is eaten in excess, or when health and activity are not sufficient to dispose of them."

Mr. E. H. Thurston, in an elaborate paper in the *Smithsonian Report* for 1896,[24] states: "While the actual dietaries are commonly largely composed of animal food, it should be at all times remembered that the teaching of comparative anatomy and general experience, so far as careful observation informs us, indicate that the vegetable starches and fats and proteins are more suitable for the animal prime motor, and even still more to the thought machine, than the carnivorous foods."

"Frankland finds the energy per pound of common foods to range from 2000 to 3000 British thermal units in the case of lean meats to about 7000 with the grains and their flours, and to over 15,000 in the case of the solid fats."

"But the power of assimilating the elements of the body and of producing muscle, nerve, brain, and bone is no less essential to the maintenance of the efficiency of the machine than the production of thermal or other equivalent energies. The grains have double the value

of the meats as brain and nerve foods, and the coarse vegetables one quarter the value of the grains in this respect. Butter and lard, the best heat producers, have no value at all as muscle and nerve material."[25]

Dr. Harry Campbell, M.D., B.S., Assistant Physician and Pathologist to the N.W. London Hospital, writes:[26] "All children in the country help themselves largely to the vegetable diet provided by nature. They eat herbs and berries, roots and nuts. . . . I think it may safely be said that children, as a body, prefer a vegetable to a meat diet. Almost every child prefers fruit to meat. . . . Some children manifest a great liking for meat; they may be taught to like it, just as pigeons and other vegetable feeders may, or as they might be taught to like many other things—gin, for instance. Man's progenitors were entirely vegetable feeders; . . . therefore man's diet should be mainly vegetable, that of children almost entirely so." . . . "It is known that the teeth of all civilised people are getting worse and worse. . . . To my mind it is a very serious matter. I suppose primitive men practically never suffered from toothache."

In this connection the opinion of Mr. Grant Allen on the origin of flesh-eating may be quoted: "Primitive pastoral races keep their domestic animals mainly for the sake of the milk, or as beasts of burden, or for the wool and hair; they seldom kill one except for a feast at which the gods are fellow-partakers." It is probable, he says, that the habit of flesh-eating has arisen out of the substitution of a divine animal victim for the divine human victim of earlier usage. Hence our butchers' shops.

The opinion of Dr. Guckerston, Dr. Densmore,

Dr. Salisbury, Dr. Evans, and others on the proper diet of man differs from that of most authorities who have studied the subject. They are against the use of cereal food for the following reasons, shortly summarised :—

1. Many diseases are cured by the mere abstinence from cereals.
2. Primal man must have depended on fruits and nuts ; cereals are artificial products. Apes, which more than any other animal resemble man, live on fruits, roots, and nuts.
3. Starchy foods are not easy of digestion.
4. Abstinence from cereal foods is found in very many instances to produce great and permanent improvement in health.
5. Cereal foods cause ossification in the joints and tissues, especially in the aged.

Dr. Cheyne wrote[27] in 1815 : "For remedying the distempers of the body, to make a man live as long as his original frame was designed to last, with the least pain and fewest diseases, and without the loss of his senses, I think Pythagoras and Cornaro by far the greatest two men that ever were. . . . Both lived to a great age. . . . Both preserved their senses, cheerfulness, and serenity to the last."

M. de St. Pierre[28] gives his opinion that nature intended man to live on fruits, nuts (chestnuts, etc.), roots, and pinekernels.

In Lord Playfair's words :[29] Animal diet is not essential to man. This is very obvious when we observe how well many races and many of our neighbours do without it ; and in thus thriving they are not

upsetting physiological teaching. "A well-educated Englishman," says Sir Benjamin Richardson,[29] "I mean one well educated in general subjects, would wonder beyond measure if he realised the enormous amount of work an Indian can do on a mere handful of rice and a few dates. But his wonder would be far more increased if in the physiological laboratory he were shown and made to understand three facts:—(1) The exceedingly small amount of flesh-forming matter that is called for to make up the waste of the muscular organs; (2) the enormous amount of wasted material which is thrown off or laid by without ever having been applied to any useful purpose in the body; (3) the tremendous measure of living energy that has been expended in throwing off from the body substances which ought never to have been put into it."

It appears from various evidence that, for most men, a diet of 12 oz. of dry food, which may be entirely non-flesh, is enough to maintain the highest bodily and mental efficiency.

We have, in fact, a treble natural rampart of objections to slaying for the sustenance of our bodily frames. First, the natural constitution of the human body, as adapted to fruit, nuts, and grain, and not flesh; secondly, the natural horror of killing, quartering, and eating the peaceful inmates of our farms; and, thirdly, the unfitness of such food, in the long-run, for the best physical and moral complete health of nations.

John Evelyn, in the course of his essay on "Sallets," wrote: "Children choose to eat fruit rather than flesh, and might persist so doing if custom did not compel them *against the dictates of nature.*" [30]

Sir Henry Thompson, the great surgeon, wrote: [31]

"Few children like that part of the meal which consists of [flesh] meat. . . . Many children manifest great repugnance to meat at first. . . . I am satisfied that if the children followed their own instinct in that matter the result would be a gain in more ways than one. . . . The young ones would, as a rule, thrive better on milk and eggs, with the varied produce of the vegetable kingdom."

The natural mental repulsion of cultured and reasonable beings at the idea of slaying and eating their animal friends is worthy of a place beside the physical ineptitude for such food.

Rousseau said [32] that one proof that the taste of meat is not natural to the human palate is the indifference which children have for that kind of food, and the preference they give to vegetable aliments. "It is of the utmost consequence not to vitiate this primitive taste in children."

Lord Monboddo: "By nature, it appears to me, that man is a frugivorous animal, and becomes an animal of prey only by acquired habit." [32]

Almost any animal can be made to eat flesh. The kangaroo has canine teeth. Horses, oxen, and sheep may be taught to eat flesh. Norwegian cows have been known to eat flesh greedily. Goldsmith saw a sheep eat flesh; a carnivor sheep is now in London.

Plutarch wondered "how the first flesh-eater touched slaughter with his mouth and reached to his lips the flesh of a dead animate." [32]

Certainly children have not only a distaste for flesh-meat, but the greatest horror and revulsion from killing the farm animals they have been accustomed to feed and fondle with devoted affection. And even

carnivora, like dogs, will not kill and eat the birds and other companions with which they have been brought up. They live with them in friendly security. It is a perpetual revolt against human nature, and even animal nature, to kill for eating the creatures that share our home surroundings.

Dr. R. S. Tracey writes:[33] "Children are notoriously fond of raw things. . . . There is only one article of daily use that the boy will not voluntarily eat raw, and that is meat—the flesh of a dead animal. . . . Raw meat seems to be absolutely repugnant to the human palate."

And Dr. John Tatham, late Medical Officer of Health to Manchester, said:[34] "It is in the care of the young especially that I would utter my plea on behalf of a diet more generally enriched by fruits."

It seems almost a crime, and it certainly is a grievous error, to force upon children the bloody limbs and trunks from the slaughter-house, at sight of which they sicken, when all their natural feeling seeks the fruits of the garden and of the cornfield.

Mr. Ernest Clark, a life-vegetarian, and descended from life-vegetarians, himself having a numerous family of life-vegetarians, considers[35] that if people had to kill their own animals, not five out of fifty would remain flesh-eaters. There is a feeling almost of horror at the mere idea of killing a beast and then eating its flesh.

Plutarch wrote:[36] "That it is not natural to mankind to feed on flesh, we first of all demonstrate from the very shape and figure of the body; for a human body in no way resembles those born for rapine . . . but if you will contend that you yourself were born to

an inclination to such food as now you have a mind to eat, do you yourself then kill what you would eat, but do it your own self, without the help of cleaver, mallet, or axe, as wolves, bears, and lions do."

Dr. Cheyne wrote:[37] "To see the convulsions, agonies, and tortures of a poor fellow-creature, whom they cannot restore or recompense, dying to gratify luxury, and scratch callous and rank organs, must require a rocky heart, and a great degree of cruelty and ferocity." The fact is that few persons have the habit of considering what they are doing by the hands of others; it is not so much cruelty as want of thoughtful sympathy which enables many of the worst evils to continue.

There can be no doubt that as the physical nature of man is not constructed for carnivorous habits, so the moral nature is revolted at the slaying and cutting up of friendly fellow-creatures.

Dr. Hawkesworth said:[38] "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 has become proportionately 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."

"Nay, tell me," says Dr. Mosset,[39] after citing the Indian Brahmans as abstainers from flesh-meats, "can civil and human eyes yet abide the slaughter of an innocent beast, the cutting of his throat, the mauling him on the head, the flaying of his skin, the quartering and dismembering of his joints, the ripping up of his veins, the enduring of ill savours, the hearing of heavy

sighs, sobs, and groans, the passionate struggling and panting for life, which only hard-hearted butchers can endure to see?" There are hundreds of delightful foods, he says, ample variety for all the needs of man apart from flesh.

Pope describes[40] the ancient times of innocence and happiness—

> "The state of nature was the reign of God."
>
> "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 disease to luxury succeeds,
> And every death its own avenger breeds."

These lines express the truth, and in the last few generations the sufferings inflicted on animals killed for the luxurious maintenance of the rich have been fully equalled, possibly surpassed, by the sufferings of the consumers of the tormented bodies.

The greatest wit of last century, and one of the most excellent of men, wrote,[41] in a letter to Lord Murray, that, having ascertained the weight of food that he could live upon, so as to preserve health and strength, and what he had lived upon, he found that between ten and seventy he had eaten and drunk forty-four one-horse waggon-loads of meat and drink more than would have preserved him in life and health, of a value of about £7000. And this meant starving, or reducing to deficient nourishment, about one hundred persons.

The result to him was a long period of suffering from gout and other infirmities. He writes in one of his letters that he has seven distinct diseases.

"The cruelty of man," as Ruskin says, "recoils, as it ever does, like a viper upon man, and they who invest in the Bank of Cruelty receive back their capital with compound interest at a high rate, and to the uttermost farthing."

The wide territory on which man now stands, the borderland between instinct and that rational living from which we still seem to be far, affords scope for the vast array of diseases which now afflict the world. Man must pass on to the Land of Reason before he can attain welfare.

"The widespread results of alcoholism,"[42] says Prof. Elie Metchnikoff, the great physiologist, "show plainly the prevalent existence in man of a want of harmony between the instinct for choosing food and the instinct of preservation." The proper instinct has, in fact, become perverted or atrophied. "It would be true progress to abandon modern cuisine and go back to the simple diet of our ancestors. Progress would consist in simplifying many sides of the lives of civilised people."

The higher physical condition of tribes or races which live simply and frugally, eating little or no animal flesh, and otherwise not less hygienic in their habits than the highly civilised communities, has often been noted. One characteristic proving the stronger and purer condition of their blood and tissues is the extraordinary power of recovery from wounds. This has been observed perhaps especially in North Africa, and among Afghans or kindred peoples. More precise data from hospitals respecting the tenacity of life or toughness of body, apparently produced by various habits in similar circumstances, would be valuable.

Elisée Reclus writes as follows:[43]—"One of the family had sent me, plate in hand, to the village butcher. . . . I remember this gloomy yard where terrifying men went to and fro with great knives which they wiped on blood-besprinkled smocks." From an enormous carcase "a reddish liquid was trickling into the gutters. I stood incapable of going forward, and too much terrified to run away. . . . I can see the sow belonging to some peasants. I remember one of them bleeding the animal slowly, so that the blood fell drop by drop. The sow cried without ceasing, now and then uttering groans and sounds of despair almost human; it seemed like listening to a child.

"For the great majority of vegetarians . . . the important point is the recognition of the bond of affection and goodwill that links man to the so-called lower animals, and the extension to these, our brothers, of the sentiment which has already put a stop to cannibalism among men. . . . The horse and the cow, the rabbit and the cat, the deer and the hare, the pheasant and the lark, please us better as friends than as meat.

"What, then, are the foods which seem to correspond better with our ideal of beauty, both in their nature and in their needful methods of preparation? They are precisely those which, from all time, have been appreciated by men of simple life; the foods which can do best without the lying artifices of the kitchen. They are eggs, grains, fruits."

It is only by an unjustifiable appointment of others to act for us that we are enabled calmly to eat the beast at the table which we could not bear

to see subjected to the horrors of the cargo-boat and of the shambles. Mr. J. S. Pengelly, in giving testimony of the great value which a non-flesh diet had been to himself, said that, as clerk to the magistrates, he had to go to the slaughter-houses to see the carcases which had been seized as being cancerous, tuberculous, or tainted with other diseases, and so prevent the foul flesh from getting to the tables of the citizens. If flesh-eaters saw these horrible sights, they would say, "No more of this poisonous food for me!" "They ought to see or to be told what happened in these slaughtering hells,—the excitement and fear of the animals, the almost human pain exhibited by those being killed, and the terror of others waiting their turn, and the smell of blood—it was a most ghastly sight." Several magistrates could hardly bear to go again. He himself was ill for days, the sickening scene rising up before him.

The way of life of the people of Burmah is more natural and more pleasant. "They do not think of killing animals. The result is that, as you pass through the crowded streets, no animal is afraid of you. There seems to be a friendly relationship between man and animals. They are all enjoying life together, and they all seem to be thankful for the great boon of life."[44]

What a contrast to the sights we see here, whether near Smithfield, or in small towns, or even in many a country village. I hear of revolting spectacles in a town in the north of England, where cows are killed sometimes in shops, sometimes in the street, amid groups of children, ill-nourished in body, ill-cared for in mind and spirit.

Father Dolling said,[45] that at Landport, "our little

children are continually acclimatised to the smell of blood." It is no uncommon thing for boys to eat raw meat and drink blood. There are nineteen slaughter-houses in their midst. "Their games are connected with the sight of death." He truly used the word acclimatised, for the sights and smells of slaughtering are not agreeable to man as they naturally are to carnivora.

These things are as unnatural to the humane mind as a flesh diet is to the human body, and deserve equal consideration with a view to saner living.

Mr. Chandra,[46] in a plea for the animals, says: "I am horrified at the levity with which you regard the lives of beasts." The beast shows almost all the signs of mental and physical agony that a man shows. It is horrible to entomb in our flesh the flesh of others, to support our life by innumerable deaths.

Add to this Mr. Street's evidence in the Report of the Veterinary Department of the Privy Council for 1879: "Thousands of animals arrive at railway stations dead, and thousands more in a crippled and tortured condition, with broken limbs and horns. We have seen ten or twelve drays from morning to noon hauling along the dead and maimed victims at a single station."

According to the recent Report of the Departmental Committee on the Inland Transit of Cattle[47]: "At the fair grounds in Ireland animals, already perhaps foot-sore and exhausted from a walk of many miles, stand for hours on the hard road, bewildered by the beating they receive and their unaccustomed surroundings." Evidence given showed that many of the drovers are brutally harsh. *So ferocious is the treatment in many cases that when the animals are slaughtered, the hide,*

as butchers testify, simply falls off the back, and is worthless even for use as leather. In transport by steamer, in bad weather, the vessel's deck becomes a shambles; "helpless cattle dashed from one side of the ship to the other, amid a ruin of smashed pens, with limbs broken, . . . dishorned, gored, and some of them smashed to mere bleeding masses of hide-covered flesh." "Many of the cattle die, . . . suffocated through being packed in the ill-ventilated and confined ''tween-decks.' . . . The stench in this fœtid atmosphere is described as horrible, the dead beasts, advanced perhaps in decomposition before death ended their sufferings, are often removed literally in pieces, so cribbed and cabined is the space."

The agonies endured in the slaughter-house, especially with inexperienced slaughtermen, are most horrible. A blow above the orbit would break through and burst the eyeball; above the nose, would force its way into the delicately nervous chamber where the the olfactory nerves are spread out, and would cause intense agony, while the front of the head generally, below the margin of the frontal bone, is highly sensitive, and a lifetime of suffering could be crowded into those terrible minutes which go before unconsciousness and death.

There are many most revolting incidents in the passage of a beast from the field or stall to the slaughter-house, and it seems not unlikely that the condition of the corpse used as food may detrimentally affect the human eater. No beast of prey subjects its victim to such prolonged agonies.

In the Official Government Report, just issued, of the Parliamentary Committee on the Humane

Slaughtering of Animals, the manner of slaughtering is described by veterinary inspectors of slaughter-houses and by master butchers. It appears that beasts arriving from the United States have been dishorned, not a very painful process "if done early in life; there is a certain amount of pain attached to it." The ox intended for human food is a mutilated beast, and many are unnaturally fattened. In country slaughter-houses the bullocks are usually felled first, then struck on the forehead, and then bled by cutting the throat. Sheep are struck on the top of the head, then a pithing-cane is put into the spinal cord, and smashes up the brain and the medulla oblongata. At Deptford, the sheep is laid on a table, and a knife is driven through the neck; this is done expertly, and the sheep dies at once. In some places the spinal cord is only imperfectly severed, and there is "a good deal of cruelty." The nearer to the brain the spinal cord is destroyed, the less pain. The better class of butchers are very humane, but the sight of killing is always disagreeable. When badly poll-axed, bullocks often get up after being knocked down.

At Deptford the men generally are skilful, and there is little suffering; about 600 to 800 beasts are sometimes killed on one day; boys are trained up to kill from the age of fourteen, fifteen, or sixteen; it requires a considerable amount of practice to hit the exact spot on the animal's head; and sheep often struggle after being stuck by an unpractised hand. At Aldershot, "the marines are first allowed to go into the offal-house; they have the handling of the knife and a view of all that is going on to get their nerves strengthened for slaughtering work; and after they have been in

there, say a month or six weeks, they are allowed to go on with flaying the animal within six weeks." After three or four months more, they use the pole-axe to do the second blow, when the animal is dead and they are pithing it; and a man after he has been there about four months, if he feels competent and has confidence enough, is allowed to knock a bullock down. This seems to be all right, but the natural antipathy to the business is manifest. Speaking of sheep, the inspector of the L.C.C. Public Health Department said it requires some considerable experience to pith an animal quickly, and another inspector of the Council said that one can see unskilful men pithing sheep, causing unnecessary suffering. The veterinary inspector to the corporation of London stated that with calves the practice is to bleed them immediately after stunning them. They are drawn up in some markets and then stunned; calves "are naturally skittish, and very likely if a man struck at a calf in the slaughter-house, he might miss it." The calves may sometimes recover consciousness after being stunned and drawn up. Killing is much improved. Mr. John Colam said that formerly calves were killed by slow bleeding, lasting for three days, the wound being stopped by tow. This only prevails now in remote parts. The object was to get white veal, a delusion.

"I think there is a great reform wanted in this country with regard to the killing of sheep. The theory is, that the killer puts the knife into the neck there and passes the point of the knife between the two joints of the vertebra, but I am sure that result is not effected, because it is not really an expert man

who kills sheep; it is generally a lad or young man in the slaughter-house who does that." A member of the Committee observed that the Committee had seen a man who was admittedly an expert perform the operation, "and he was successful in a varying degree" as regards time. It would be a difficult operation for the inexpert. A veterinary inspector of much experience stated that "the cane is put in to protect the butcher against involuntary movements": "the butcher does not want to kill the animal by breaking up the medulla, that is only to stop the involuntary movements; if he did not, he would be kicked. To begin with, bleeding is the next stage, and the muscles of the neck twitch when he tries to cut down on the jugular and carotid, and again, when he starts to skin, there are jerks of the muscles, and so on." "The heart does not cease to beat till nearly five minutes after poll-axing." "The use of the cane does not produce insensibility any more than the blow of the poll-axe." Other opinions, however, of physiologists of very high standing, do not agree with this view. "Lack of sensibility," says this witness, extends to all behind the head, but it is a very old physiological question as to what happens to the head. The Committee's interesting report on the evidence should be read by all who eat, but do not kill with their own hands.

CHAPTER II

Calculated Chemical and Physiological Values of Foods—Comparative Cost of Equivalent Articles

It is not the purpose of this volume to give details of the elaborate chemical investigations which have demonstrated the composition and apparent value of a great variety of substances used for the sustenance of man.

Several excellent books have been published which can be consulted in almost any good public library. And many admirable scientific papers are in existence, which are well worth consulting by those interested in the theoretical question.

It may be convenient, however, to include some of the principal results of the very elaborate researches which have been undertaken by high authorities in this department.

The energy per pound developed by common foods, according to Frankland, has already been stated, also the observations of Mr. Thurston regarding the power of assimilating for the production of muscle, nerve, brain, and bone. The grains, he found, have double the value of flesh as brain and nerve foods.

Mr. Thurston finds[1] that 85 per cent. of the food of man is applicable to work, and 15 per cent. to muscle making.

On the whole, four times as much energy is supplied in good food for heat and work as for muscle repair, and forty times as much as for brain and nerve.

The underground vegetables, "which can hardly be called foods," such as potatoes, carrots, and turnips, contain three-quarters to seven-eighths of their weight of water, and only supply from 800 to 1800 British thermal units of energy.

Atkinson gives from 2 to 2·75 lb. of common foods per day as dietaries on which life can be sustained and ordinary work done without strain. "Much included in the bill of fare of the well-to-do citizen has no real value in nutrition; some of it is actually and often seriously detrimental, and some, possibly a large proportion, is simply superfluity and waste."

The vegetable starches and fats and proteins are most suitable for the animal prime motor, and still more for the thought machine.

"The writer has, as a matter of experiment, lived for long periods of time on about 12 oz. per day of oatmeal (dry), or the equivalent in cracked wheat or other grain, supplying but about 1400 calories per day, and, leading a sedentary life, found this allowance ample. This is also the least costly of all foods. The writer has known young men live on sixty cents a week, making up the dietary of grain foods mainly."

The following table, according to Haliburton,[2] gives the chief substances in some of the principal meats:—

Constituents.	Ox.	Pig.	Fowl.
Water . . .	76·7	72·6	70·8
Solids . . .	23·3	27·4	29·2
Proteids and gelatin	20	19·9	22·7
Fat . . .	1·5	6·2	4·1
Carbo-hydrate .	0·6	0·6	1·3
Salts . . .	1·2	1·1	1·1

"The large percentage of water in meat should be particularly noted; if a man wished to take his daily minimum of 100 grammes of proteid entirely in the form of meat, it would be necessary for him to consume about 500 grammes (a little more than 1 lb.) of meat per diem."

"The following table [abbreviated] contrasts the composition of some of the more important vegetable foods:—

Constituents.	Wheat.	Oats.	Rice.	Lentils.	Peas.	Potatoes.
Water .	13·6	12	13·1	12·5	14·8	76
Proteid .	12·4	10·4	7·9	24·8	23·7	2
Fat . .	1·4	5·2	0·9	1·9	1·6	0·2
Starch. .	67·9	57·8	76·5	54·8	49·3	20·6
Cellulose .	2·5	11·2	0·6	3·6	7·5	0·7
Mineral salts	1·8	3	1	2·4	3·1	1

"We see from this table the great quantity of starch always present. The small quantity of fat. . . . Proteid, except in potatoes, is pretty abundant, and especially so in the pulses."

Moleschott gives the following daily diet:—

Proteid, 120 grammes; fat, 90 grammes; carbo-hydrates, 333 grammes. Ranke gives—proteid, 100

grammes; fat, 100 grammes; carbo-hydrate, 250 grammes.

"From the composition of the more commonly used foods, G. N. Stewart calculates that 500 grammes (18 oz.) of bread and 250 grammes (9 oz.) of lean meat constitute a fair quantity for a man fit for hard work." Five hundred grammes of bread contain 40 grammes of proteid, 250 grammes of lean meat, 55 grammes of proteid.

Statistics from the United States, Germany, and Great Britain show that from 50 to 60 per cent. of the income of wage-earners and other people of moderate means is expended in food. The works of Dr. Pavy, Dr. Hutchison, and others, and Dr. S. Martin's article in that great work, *A Treatise on Hygiene*, by Dr. Thomas Stevenson and Mr. Shirley Murphy (M.O.H. to London), should be consulted for very full investigations of the composition of foods and of their values.[3]

From a table showing about the amount of the various constituents of food which a shilling will buy, the following particulars are extracted :—

1 shilling will buy of—	Protein.	Fat.	Carbo-hyd.	Fuel value.
Round of beef, at 8½d. a lb.	0·26	0·17	...	1,235
„ at 5d. a lb.	0·44	...	...	2,105
Salt fat pork, at 7d. a lb. .	0·03	1·40	...	6,025
Mutton, at 9d. a lb. . .	0·20	0·20	...	1,245
„ at 5d. a lb. . .	0·37	0·35	...	2,245
Fresh cod, at 3d. a lb. .	0·45	0·01	...	945
Pork (smoked ham), at 8d. a lb.	0·20	...	...	2,435
Whole milk, at 4d. a quart	·19	·23	...	1,915
Skimmed milk, at 2d. a quart	·4	·03	·61	2,085
Butter, at 1s. 6d. a lb. .	·01	·54	...	2,320
„ at 1s. 3d. a lb. .	·01	...	...	2,770
Eggs, at 1s. 6d. a dozen .	·10	·07	...	475

1 shilling will buy of—	Protein.	Fat.	Carbo-hyd.	Fuel value.
Cheese, at 7d. a lb. . .	·43	·55	·04	3,265
Wheat bread, at 1⅛d. a lb.	·76	·13	5·57	12,421
Oatmeal, at 1½d. a lb. .	1·08	·53	5·39	14,430
Rice, at 1¾d. a lb. . .	·45	·02	5·27	10,795
Potatoes, at ½d. a lb. .	·34	·02	3·60	7,470
Beans, at 2d. a lb. . .	1·05	·10	3·47	8,960
Sugar	...	...	6·86	14,760

The very high nutritive value, at small cost, of wheat, oatmeal, rice, and beans is here apparent. The protein of flesh meat, according to Dr. Atwater, is somewhat more fully utilised for nourishment than the protein of vegetables in general. The high value of skimmed milk is remarkable.

The *fuel*-value of fat is, weight for weight, 2¼ times that of either starch or sugar. Hence fat pork and butter lead in fuel-value. Salad or olive oil would be equally good.

According to Dr. Atwater,[4] the well-known American investigator, protein includes the nitrogenous nutrients, except nitrogenous fat, namely, the proteids albumen (like white of egg), casein (curd of milk), myasin of muscle (lean meat), gluten of wheat, etc.; and the non-proteids include the extractives of meat and the amides and allied compounds of vegetables and fruits. Protein forms tissue (muscle, etc.), fat, and fuel.

Fat includes fat of flesh meat, butter, olive oil, oil of corn, wheat, etc. Fats form fatty tissue and fuel.

Carbo-hydrates include sugars, starches, cellulose (woody fibre), etc. Mineral matters are phosphates, sulphates, chlorides of potassium, sodium, calcium, etc. Carbo-hydrates are transformed into fat, and serve as fuel.

All these nutrients yield energy in the form of heat

and muscular power. Animal foods have most protein and fats; vegetable foods are rich in carbo-hydrates. Cheese has a large proportion of protein derived from the milk. Beans and peas and oatmeal have much. Wheat has a moderate quantity, maize, meal, and rice rather a small quantity. In fuel-value fat pork and butter are highest. Other meat fats stand high, so do grains, flour, and meal. Potatoes are low in fuel-value and protein; a large quantity is necessary for sustenance. Milk, by weight, also ranks low, being seven-eighths water.

There is much, evidently, both in chemical physiology and in actual experience, to confirm Dr. Carpenter's statement that "good wheaten bread contains more nearly than any substance in ordinary use the proportion of azotised and non-azotised matter which is adapted to repair the waste of the system, . . . and we find that health and strength can be more perfectly sustained upon that substance than upon any other taken alone." This, of course, refers to the ordinary digestion of a healthy person.[5]

The *availability* of animal products is 97 per cent. as regards protein, 95 as to fat, 98 as to carbo-hydrates; of cereals 85, 96, and 98 respectively; of vegetables 83, 96, and 95; of fruits 85, 90, and 90. These are the results of about 300 experiments on men living on different diets.

The rapidity of the digestive process is important in many cases, especially where meals are too near together—say, with less interval than five hours. There is much difference in the time taken to digest different substances.

Dr. Beaumont's tables show that soft-boiled rice is

converted into chyme in one hour; barley, stale bread, codfish, and raw eggs in two; soft-boiled eggs, beef, and mutton in three; roast fowl in four; veal, pork, and salted beef in five and a half. Bread and butter take longer than bread alone.

Dr. Hemmeter[6] gives a table, after Scammell, showing the percentages of material of different kinds in various foods, from which a few examples are here appended :—

	As material for the muscles.	As heat givers.	As food for brain and nervous system.
Wheat .	14·6	66·4	1·6
Oats .	17	50·8	3
Beans .	24	40	3·5
Rice .	5·1	82	0·5
Potatoes .	1·4	15·8	0·9
Milk .	5	8	1
Beef .	19	14	2
Mutton .	21	14	2
Ham .	35	32	4·4
Chicken .	21·6	1·9	2·8
Herring .	18	0 or little	4 or 5
Yolk of eggs	...	29·8	2
White of eggs	13	...	2·8
Cheese .	30·8	28	4·7
Dates, fresh	...	73·7	...
Figs .	5	57·9	3·4
Pearl barley	4·7	78	0·2
Prunes .	3·9	78·6	4·5

According to Moss, the percentages of nutrition in the following foods named are :—

Milk . .	7	Wheat bread	90
Potatoes .	22·5	Boiled peas .	93
Oatmeal porridge	75	Codfish .	21
Boiled rice .	88	Boiled mutton	30
Butter . .	93	Boiled beans	87
Whipped eggs	13	Boiled barley	92
Roast poultry,	26	Raw oil	96
Rye bread, .	79		

The percentage of digestibility, according to Atkinson, is somewhat higher for flesh and milk than for meals and peas and rice. That is, for instance, that practically all the protein of a piece of meat or fish would be digested, but 81 to 100 per cent. of the protein of a piece of bread.

Mr. Miles gives[7] the percentages of proteid or gelatine in various foods as follows :—

Beef contains	20 per cent.	of	proteid or gelatine.
Pork . .	12	,,	,,
Pea soup .	3·38	,,	,,
Milk . .	2·3	,,	,,
Plasmon . .	69	,,	,,
Cheddar cheese	33·4	,,	,,
Eggs (white) .	12·6	,,	,,
Eggs (yolk) .	16·2	,,	,,
Wheat . .	11	,,	,,
Oatmeal . .	14·2	,,	,,
Wholemeal bread	6·3	,,	,,
Crust . .	5·70	,,	,,
Crumb . .	0·75	,,	,,
Macaroni .	10·89	,,	,,
Dried peas .	21·0	,,	,,

Lentils contain	23	per cent. of proteid or gelatine.
Haricots .	23	,, ,,
,, (cooked)	4·4	,, ,,
Potatoes .	1·2	,, ,,
Apples . .	0·4	,, ,,
Grapes . .	1·0	,, ,,
Bananas . .	1·5	,, ,,
Dates . .	4·4	,, ,,
Figs . .	5·5	,, ,,
Prunes . .	2·4	,, ,,
Raisins . .	2·5	,, ,,
Chestnuts .	10·1	,, ,,
Walnuts . .	15·6	,, ,,
Sweet almonds	24	,, ,,
Spinach . .	2·5 or less	,,
Butter . .	practically none.	

Dr. Pavy, in his book on *Food* states the following as the weight and cost of various articles of food that would have to be consumed in the system to raise the body of a person weighing 10 stone to a height of 10,000 ft. (Frankland) :—

	Weight in lb.	Cost. s.	Cost. d.
Cod-liver oil . .	0·553	1	$11\frac{1}{4}$
Beef fat . . .	0·555	0	$5\frac{1}{2}$
Butter . . .	0·693	1	$0\frac{1}{2}$
Cocoa-nibs . . .	0·735	1	$1\frac{1}{4}$
Cheshire cheese . .	1·156	0	$11\frac{1}{2}$
Oatmeal . . .	1·281	0	$3\frac{1}{2}$
Arrowroot . . .	1·287	1	$3\frac{1}{2}$
Flour . . .	1·311	0	$3\frac{3}{4}$

	Weight in lb.	Cost. s.	d.
Peasemeal . . .	1·335	0	$4\frac{1}{2}$
Ground rice . . .	1·341	0	$5\frac{1}{2}$
Bread . . .	2·345	0	$4\frac{3}{4}$
Lean Beef . . .	3·532	3	$6\frac{1}{2}$
Potatoes . . .	5·068	0	$5\frac{1}{4}$
Whiting . . .	6·369	9	4

And the following portions of alimentary substances in a dry state are said to be required daily for the support of an ordinary working man of average height and weight (Moleschott) :—

Dry Food.	Oz.	Grammes.
Albuminous . . .	4·387	130
Fatty	2·964	84
Carbo-hydrates . .	14·250	404
Salts	1·058	30

Dr. Sidney Martin, in the course of his article on "Food," makes these statements :—

"Practically speaking, the nutrition of the nitrogenous tissues means the nutrition of the body."

"The effect of the *mixture* of foodstuffs is the chief physiological factor in considering food."

"An excess of proteid food would throw an excess of work on the nitrogenous tissues. The excretion of urea," according to Lehmann, "is greatest with animal diet." "To preserve health, the proteid taken must equal that destroyed. . . . With every individual there is a maximum and minimum of intake." Fats and carbo-hydrates are of advantage for mixture with proteid

foods, and allow the proteid foods to be diminished in quantity. Carbo-hydrates are both proteid-sparing and fat-sparing.

Water is necessary for the proper carrying on of all the chemical and mechanical functions of the body. Salt is necessary, especially to vegetable feeders, for no large quantity is supplied in vegetables, as it is in flesh. Phosphates also are necessary. Iron is "essential to life and health; it forms an important part of the hæmoglobin of blood corpuscles. Animal flesh contains most iron."

"It is usually considered that the animal proteids (myosin, egg-albumen, etc.), have the same nutritive value as the vegetable proteids (gluten, legumin, etc.)." This has been confirmed by Dr. Rutgers' experiments. "It may be concluded that man has chosen the three best proteids for his food in the myosin of meat, the casein of milk, and the gluten of bread."

"The difference in the nutritive value of fats seems to depend almost solely on their digestibility."

"Milk contains a sufficient proportion not only of sodium chloride [salt], but of potassium and calcium phosphates and iron."

"In the dietary of the working classes in all parts of Europe there is a deficiency of proteid and of fat, and an excess of carbo-hydrates." The deficiency, says Dr. Martin, would be made up by an addition of animal products. It can, of course, be made up by additional milk, or pulse, or nuts, or cheese, or almonds and olive or other fine oil.

"A large meal late in the evening leads to digestive disturbances." The proper times for the chief meals of the busy man are at breakfast and early in the

evening, but to the "working man" the middle of the day is most convenient for the largest meal.

The times of digestion of different foods are about as follows on an average: Milk, rice, about an hour or less; whipped eggs, barley soup, salmon, trout, about 1½ hour; peas and flesh, about 2 hours or more; sago, 1¾ hour; barley, boiled milk, raw eggs, cabbage with vinegar, soup with fat and bread, about 2 hours; raw milk (Richet), baked eggs, ox-liver, 2¼ hours; lamb, beans, potatoes, cabbage, hash, 2½ hours; boiled eggs, beef-steak, white bread, ham, beef, fish, mutton, 3 hours; pork, poultry, veal, brown bread, 4 hours; salt pork, hard-boiled eggs, 5 hours.

Sleep diminishes digestion. Food taken too often spoils digestion.

An excess of proteid, chiefly of animal food, throws great work on the nitrogenous tissues, and causes disorders of the liver and muscles, and often apparently causes gout.

Excess of food causes indigestion.

Cheese is indigestible to many persons, and the nutritive value [of the harder cheeses] is therefore much smaller than would appear from its composition. Cream cheese has much more fat and very much less casein.[3]

Sir Michael Foster says: "Proteid matter we must always have. . . . We might indeed manage to live on proteid matter alone, and out of it, with the help of a few minerals, we might renew the whole blood, and build up any and every part of the body. But it would be uneconomical and unwise to do so."

It is generally recognised that proteids, fats,

carbo-hydrates, minerals, and water are the most important constituents of food. Of course, it would be a mistake to suppose that, because proteid is the most important thing, a food rich in proteid should be eaten in large quantities and to the exclusion of other constituents. In fact, it would be easy to go to wasteful excess in some of the artificial proteid and plasmon foods now supplied to the invalid.

The following table, from Prof. Atwater's standards, exhibits the requirements of persons in active work and sedentary:—

	Proteid.	Energy or Fuel Value.
	Grams.	*Calories.*
When at hard muscular work .	150	4350
When at moderately active muscular work . . .	125	3400
When with light muscular work	112	3050
When with sedentary work .	100	2700
When with very little exercise	90	2450

Dr. Haig calculates that a man weighing 9 stone, in active employment, requires 1323 grains of proteid, in hard work 1523, and a man of 12 stone requires 1764 and 1964 grains.

A light diet is often more nutritious, especially for invalids, for persons with weak digestions, and for the aged, than a full and solid meal. But a sufficiency of proteid, such as that contained in eggs, or milk, or cheese, or flesh, or whole meal, or Hovis bread, or nuts, or oatmeal, or beans, or peas, or some vegetables and fruits, is most important. Schwann, Klein, Brown-Sequard, and Gautier have shown

that proteid foods are active in nourishing nerve tissue.

Prof. Atwater has put forward, among rules suggested for public institutions, this recommendation: Hygienic economy requires not only that the food shall meet the physiological demands in respect of the quantities of nutriment and energy, but also that it shall be fitted to the digestive powers and other physiological peculiarities of the users; this is of special importance for invalids and young children. The comfort and welfare of the users are promoted by making the food palatable. Excessive eating, he says, is not only a waste of food and public money, but it is injurious to health. Well-to-do people generally eat to excess, and there are many, on the other hand, who do not eat as much as would be best for them.

As to drink, history and science show that water is by far the best of all liquids for the human constitution, and, indeed, for all highly developed animals. It supplies what is wanted, and nothing more. Milk is for the young, water for the grown. Nutriment is not required in drink, nor any stimulant principle, except on special occasions, as after a severe march or an exhausting journey. But even then hot water will usually be found to be by itself a sufficient stimulant. As a rule, nothing more than water or the juices of fresh fruits is ever required, and water, cold or hot, between meals is the physiologically perfect drink. In many conditions of ill-health, due to errors of diet, it is also a perfect medicine.

Julius Cæsar knew its worth, rarely drank wine himself, and greatly admired his valiant foes, the

Nervii, who were water-drinkers, and forbade wine to be brought among them, as injurious to their strength.[8]

"'Ἄριστον μέν ὑδῶρ," the old Greek said, and this is the conclusion of science.

CHAPTER III

The Food of Animals considered in relation to Strength and Size—Characteristics of Flesh-eating Animals

Since one of the main questions to be dealt with has to do with the relative values and effects of food supplies from the two kingdoms—of the plant and of the animal—in the development of muscular strength, it may be useful to glance, in a brief review, at the evidence of strength, endurance, and other qualities attained by several mammalia and birds subsisting on various sorts of nutriment.

To compare the strength of animals of different habits with each other is no simple matter, but if strength and endurance be taken together, a fair comparison may be arrived at. The horse, camel, and elephant may well represent the strongest animals for service, and perhaps the best muscular development all round. The lion, tiger, and polar bear may be equally strong for occasions, but are not so well fitted for a steady and constant strain of work.

If we put the development of muscle by grain or plant food and by flesh food as equal, we must still conclude that for the effective use of energy the plant-eater is superior.

Horses under domestication give every opportunity for determining the kind of food which in them produces the greatest available strength. It is well known that grass and green food generally fail to raise their capacity for work to a high degree. Corn or beans and hay together form the diet best fitted for maintaining full strength and endurance. Wild horses, donkeys, deer, and elephants certainly exhibit agility and robust health on green food, but for heavy traction work they require more concentrated nutriment.

Horses which consume maize (Indian corn) are exceedingly hardy and require but little care.[1]

The wild ox, sheep, and goat, the antelope, the stag, the hare, the wild boar, each prove the power of green and growing vegetable food to maintain strength, agility, and swiftness, but each is equalled by the flesh-fed dog, and perhaps by some of the beasts of prey. Dogs, however, do well on a mixed diet containing little animal flesh. And, indeed, though they have carnivorous teeth and intestines, many dogs thrive when given a strictly non-flesh diet.[2]

It is a curious fact, physiologically considered, that lions and tigers seem to be capable of living fairly well with only a little flesh food, and with a large quota of vegetables. Some of the fakirs of India give their tame tigers no raw animal food, and only supply them with a mixture of boiled rice and vegetables, their own diet. But they allow these tigers sometimes to roam at large.[3]

The small carnivora may be similarly treated. A gentleman writes:[4] "I have an old cat in her seventh

year, a young one of one year, and a dog of four years, none of which have tasted meat from a butcher's shop, so far as I know. My cats eat all the mice and birds they can get hold of, and on rare occasions the dog joins them in a feast of fish. The cats get wheaten bread and milk daily, and porridge when any is left; the dog gets two tablespoonfuls of dry oatmeal and a bit of hard wheaten bread; it is as fat as a pig and as lively as a cricket."

The camel is an example of quite astonishing strength and endurance, maintained on very scanty and simple forage.

The strongest, most muscular animal for its size is probably the monkey, in such tribes as the orang-utang, the gorilla, and the macaque, one of which is said to have been always the winner against dogs twice his size. "They are probably the most formidable fighters in the animal world." The orang-utang, according to Dr. Alfred R. Wallace, is a harmless creature, feeding on fruit, and never attacking any other animal except in self-defence. It is very large and strong, and has enormously powerful arms. As to the gorilla, Du Chaillu, the great traveller and the discoverer of this huge ape, saw one break to pieces quite easily a gun accidentally dropped; and Dr. Duncan affirms that the gorilla is more than a match for the African lion. It is said that ten men are not too many for holding a full-grown specimen; and the very young gorillas brought to the Zoological Gardens five or six months ago showed tremendous powers for their age.

All these monkeys are practically vegetable feeders, living on fruits, nuts, and roots, but some kinds

occasionally eat insects, birds, and eggs. For purposes of comparison with men, the orang-utang and gorilla are the most useful examples on account of the close resemblance of the teeth, internal organs, and constitution generally, to the human. Apes have been often fed, when in confinement, on animal flesh, but have not thriven upon it, and the keepers have been compelled to restore them to a vegetable diet.

Birds can assimilate ten to thirty times as much food as a man, proportionately to the weight of their bodies.

A tree-sparrow has been known to eat 700 grass seeds in a day. A white-tailed eagle, weighing between 11 and 12 lb., has been known to raise a pig of 42 lb. to a height of 100 ft. and to fly away with it. This bird flew half a mile before it was shot. This would be paralleled by the lifting of more than the weight of four men by one man.[5]

Storks are believed, without any sort of proof, I think, to fly the distance from Lahore to Buda-Pesth in twenty-four hours; that is, at the rate of a hundred miles an hour.[6] A speed of fifty-five miles an hour by pigeons for fourteen hours has certainly been recorded.

Extreme statements as to the speed of birds require verification, but there can be no doubt that the strength of eagles, storks, and many other birds of very different habits of feeding is exceedingly great, and that they are capable of very rapid motion and continuous activity.

There is little to choose, apparently, as regards strength and swiftness, between flesh and plant

feeders. Pigeons and parrots are remarkable for these qualities, so are swallows and jays. So are mixed feeders, like rooks, magpies, and starlings.

As to longevity, accurate accounts of various animals are wanting, but the estimates given below are probably sufficiently near the true values for the present purpose.

Prof. Ray Lankester has written a small book[7] on the subject, and the evidence given by him puts the length of life of the animals named as in the following table: the estimate of Prof. M'Kendrick, the writer of the article "Longevity," in the *Encyclopædia Britannica*, is adduced in the next column:—

	Food.	Lankester.	M'Kendrick.
Pelicans, herons	Fish	40–50	...
Hawks	Birds, etc.	30–40	...
Nightingales	Insects	15	...
Poultry	Mixed	10	...
Thrushes	Insects	8–9	...
Wrens	...	2–3	...
Eagles	Birds, etc.	60	...
Parrots	Grain, etc.	60	...
Pheasants, partridges	Grain, etc.	16	...
Hares, rabbits	Herbs	7	7–10
Pig	Mixed	15	15–20
Sheep	Herbs	10	7–10
Goat	Herbs	10	7–10
Ox	Herbs	16	15–20
Horse	Grain, etc.	25–40	40
Camel	Herbs, fruit, etc.	40–50–100	50–80
Fox	Birds, rabbits, etc.	Short	7–10
Rhinoceros, hippopotamus	Herbs	70–80	...
Elephant	Vegetables	100	...
Deer	Herbage	...	30
Dogs, jackals, cats	Flesh	..	15–20
Donkey	Herbage	...	30–40
Monkey (cebus)	Vegetable	...	10

The camel is said to live to a hundred, or at least to fifty. Its food is coarse, and, generally, it is hard worked. The horse, when not hard worked, has been known to live to fifty, but thirty would be about the average.

The above table does not indicate any considerable preponderance in length of life due to the kind of food eaten; but it is somewhat remarkable that both the elephant, among mammals, and the parrot, among birds, whose longevity is extreme, are vegetable feeders. The eagle, however, is said to be equal to the parrot in the age to which it can attain, and probably the whale may be equal to the elephant, so that no clear superiority remains with either kind of feeder.

Among lower animals, the tortoise and the crocodile are both believed to live to a great age: one is purely carnivorous, the other purely vegetarian.

Darwin mentions five animals which live longer than man—elephants, parrots, ravens, tortoises, and some fish.[8] Three of the four land animals are plant-eaters.

The habits of flesh-eating animals are not pleasant. In hiding during the day, and skulking in the twilight, or sneaking on silent feet during the night hours, depending on tricks and cunning, they are the enemies of all peaceable beings. Their mien expresses stealthy and suspicious ferocity, or profound melancholy. Sombre gravity preponderates, as in the lion and eagle, which do not seem capable of the enjoyment of life shown by most of the grain-eating tribe. Considering that they have to exercise their wits more than the non-carnivora, they are remarkably

unintelligent, except the fox and a few others; they are far surpassed in sagacity by elephants, rooks, and cockatoos. On the other hand, dogs, in a state of domestication, with mixed food, are the most intelligent of quadrupeds.

A medical writer has remarked, in an interesting article[9] concerning the sanitation of the alimentary canal, on the pungent and sickening smells from the dens of carnivora, and in the haunts of cats, and has contrasted these with the sweetness of the cow's breath and byre, and with the ammoniacal smell of stables. The unpleasant odours which often emanate from the skin and breath of gross flesh-eaters are cured, he says, by the adoption of a grain and fruit diet, and are not observed among abstainers from flesh.

To sum up, the plant-eaters may be stated to be at least equal in strength to the carnivora, superior in endurance, equal in swiftness, superior in happiness, at least equal in longevity, and superior in amenity.

Most to our present purpose, however, is the fact that the plant-eaters are more enduring as tribes than the carnivora. The battle is not always to the fierce, nor the race to the swift. The gentleness of the antelope prevails against the ferocity of the lion, the stag outclasses the wolf, the bull beats the bear, and the rabbit beats the weasel. The social creatures are the happiest, the best fitted to survive and replenish the earth. The carnivora are retiring and decreasing, the plant-eaters have multiplied. Small birds are always multitudinous, while the eagle kind remain scarce and solitary.

We shall find in the distribution of the races of man a remarkable analogy to this tendency of the so-called weak to confound the strong, and of the ravening aggressors to decline from their supremacy.

CHAPTER IV

Diet of Ancient Peoples, and Opinions of some of their Greatest Men

On the whole, the diet of the majority of races, both civilised and uncivilised, in ancient times, and till the early Middle Ages, seems to have been chiefly derived from plants, but in many cases it was mixed, and often in the richer classes largely animal.

The frequent protests of illustrious men against the eating of flesh in Greece, Rome, and in several parts of the Roman Empire, indicate that the practice was at the time common—at least in the cities.

Pythagoras was "a man of immense learning and extraordinary intellectual power." He contended strongly against flesh-eating, and was one of the most notable advocates of the natural diet in the ancient world.[1]

The beautiful and, for a long time, widely accepted teaching of Gotama, or Buddha, his tender regard for all mankind and for all living things, are familiar to all readers of the *Light of Asia*, and of Prof. Rhys-Davids' *Buddhism in India.*

Zeno the Stoic, Diogenes, Plato, Plutarch, Plautus, Proclus, Empedocles, Socion, Apollonius Tyanareus, and Porphyry were reputed to be abstainers. Diogenes observed "that we might as well eat the flesh of men

as of other animals." "I am astonished to think," said Plutarch, "what appetite first induced men to taste of a dead carcase." "How could men dare to see an impotent and defenceless creature slaughtered, skinned, and cut up for food?" Cicero said that men were destined to a better occupation than pursuing and cutting the throats of dumb creatures. Clement of Alexandria says of St. Matthew that his diet consisted of roots, fruits, and herbs.

Minutius Felix, about 210 A.D., in a dialogue defending the Christian religion, makes the principal speaker say: "We Christians cannot bear to look on a carcase, and so abhor human bloodshed that we abstain from that of beasts."

Triptolemus, who established the Eleusinian mysteries, prohibited by law all injury to animals. His words were: "Do not kill animals."

Porphyry wrote to Castriccius: "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 was then confessed was true. The use of flesh does not contribute to health, but rather prevents it."

"Cyrus, who raised Persia from an obscure, rude colony into one of the most powerful and splendid empires the world ever saw, who performed more extraordinary marches, fought more battles, won more extraordinary victories, and exhibited more personal prowess and bodily power of effort and endurance than almost any other general who ever lived, subsisted from childhood on the simplest and plainest diet of vegetable

food and water, . . . and the Persian soldiers who went with him through all his career of conquest . . . strictly adhered to the same simplicity of vegetable diet (bread, cresses [vegetables], and water) throughout the whole of their heroic course." [2]

Xenophon says that Cyrus was brought up on a diet of bread, cresses, and water till fifteen, when honey and raisins were added.[3]

Porphyrises, in 233 A.D., wrote that "the eating of much flesh fills with a multitude of evil diseases." [3]

Hippocrates, according to Sir Henry Thompson, spoke of "overeating as more injurious than overdrinking." [4]

Socrates, Epicurus, Seneca, Musonius, Clement, Chrysostom, Bernard, Decius, and Fabricius, are quoted as examples of frugality.

The common food of the Hebrews in Palestine in the periods of the Old Testament was bread made of wheat or barley; barley-meal was the common food of the poor. Unleavened bread was used in the earliest times. In New Testament times barley-meal was still in common use, and to this day is the food of the Bedouin in North Arabia. Lentils were the staple diet of the Egyptian pyramid-builders, and were commonly eaten by the Hebrews from the earliest to the latest times. Lentils were eaten very much in the form of pottage, being stewed in oil, as the Spaniards stew haricot beans. Lentils and beans formed an important part of the Hebrew diet; lentils were probably the pottage of Esau; Daniel's fare was pulse and herbs; Judas Maccabæus and his associates lived on a vegetable diet; Josephus at Rome on figs and nuts.

Beans and bean-meal, chick-peas, and gourds, and other such fruit, were the common diet of large populations in the East. Rice was largely used in the Greek period in Palestine. Millet was also common, and sesame is still cultivated for the oil and sprinkled on bread. The bakemeats mentioned in the Bible were dough baked in olive oil. Bread and melons or cucumbers form the main food of the poorest class in the large cities of Syria, and from Constantinople to Cairo, now.[5]

"The inhabitants of the Bible lands lived chiefly on vegetable foods," according to Mr. MacAlister.[6] "At the present day, bread, olives, oil, butter, milk, and cheese, fruit and vegetables, with meat on special occasions, or in particularly wealthy households, make up the dietary of most of their descendants in the East." Melons are much used. Bread was made especially of wheat, millet, dhurah, and barley. Rice is now added. Parched corn, beans, and peas form an important part of the diet of Western Asiatics. The Bedawi meal described in Ezekiel was dates, bread, and milk. The food carried on journeys consisted of bread, cakes of figs or raisins, parched corn, and water.

Homer never represents fish or game being put on the table; he equally excludes fruit. He passed over the use of vegetables generally. Vegetables were, however, set before the ancient heroes at the siege of Troy when they supped. The meat of the Homeric heroes was chiefly roast beef.[7] [Athenæus.] But it is stated that "Athletic Greece rose to her greatest culture upon two meals a day, consisting principally of maize and vegetables steeped in oil."[8]

The Romans (soldiers) had corn given them, which

they ground and baked, using some lard to smear their bread with. They used a little vinegar with their water. Sometimes oxen and sheep were divided among them. Polybius, in about the third century, says that wheat is distributed to the infantry, and barley and wheat to the cavalry.[9]

"So far as bodily strength and voluntary endurance are considered," said Graham, "the Roman soldier was far the most powerful and heroic in Rome's earliest days, when he subsisted on his simple vegetable food."[10]

According to Pausanias,[11] the athletæ of Greece were accustomed, before the time of Gnatho Dipæensis, to eat fig cheese, and not animal food.

M. d'Arnay says[11] that in the first ages of Rome the Romans lived upon roots, milk, and coarse pottage, eating flesh only on extraordinary occasions. And Seneca: "Ignorant of the art of ordering a feast, they possessed the art of conquering their enemies in war, and of governing the citizens in peace."

Petrarch wrote: "Virtue has not a greater enemy than wealth. It was that which conquered Rome, after Rome had conquered the world. Every foreign vice entered that city by the same door at which poverty went out of it."

The disgusting feasting and licentiousness, the fortunes spent on banquets of animal corpses and cruel delicacies, the spoiling of the people by free distributions of corn, the expulsion of the yeomen and peasantry from the land, the gross luxury and demoralisation which took the place of the old simple Roman life, certainly affronted the wholesome forces of nature,

and, happily for the world, Rome in her opulence was doomed to perish.

The Saracens were remarkable for a hardiness of constitution and a fiery spirit, which enabled them to undergo the greatest fatigues, and rendered them the terror of their enemies. Their chief drink was water; their food consisted in great measure of milk, rice, and fruits. "The great Omar" lived entirely on barley bread and water.[11]

The people of India were described by Megasthenes, a Greek ambassador, in the fourth century before Christ, as follows:[12] "They live happily enough, being simple in their manners, and frugal. They never drink wine except at sacrifices. Their beverage is a liquor composed from rice instead of barley, and their food is principally a rice pottage. . . . They seldom go to law. . . . They make their deposits and confide in each other. . . . Truth and virtue they hold alike in esteem. . . . The tillers of the soil, even when battle is raging in their neighbourhood, are undisturbed by any sense of danger." (They are regarded as inviolable.)

It is interesting to compare this account with the description of the Indian people given by Mr. Vaughan Nash and others quite recently.[13]

Herodotus[14] alludes to the Egyptians of Upper Egypt as follows: "The Egyptians are, I believe, next to the Libyans, the healthiest people in the world—an effect of their climate—in my opinion. . . . They live on bread made of spelt, which they form into loaves. . . . Their drink is a wine which they obtain from barley. . . . Many kinds of fish they eat raw, either salted or dried in the sun." Athenæus says the Egyptians were great eaters of bread. Quails, ducks, and small birds they

ate uncooked. Birds and fish not sacred were eaten roasted or boiled. The Egyptians were persuaded that the majority of disorders proceed from indigestion and excess in eating.

Xenophon describes the Mossynoecians and their way of living. Boiled nuts and baked loaves were their chief articles of food; there were large stores of nuts on the upper floors. They also ate dolphins' flesh, and drank wine. They were a strong, warlike people.

At Calpre the soil produced barley, wheat, all sorts of pulse, millet, sesame, figs, and vines.

The Thracians lived on flesh meat, loaves, and wine.[15]

Van Cooth, a learned medical writer, affirms that the great body of the ancient Egyptians and Persians confined themselves to a vegetable diet.[1]

The Persians, when their empire was at its greatest, only had one meal a day—about noon. The Greeks ate twice—the first meal at midday.[16]

The 1400 monks who followed Pachonius lived on bread and water, oil, occasional fruits and vegetables, and salt. Later the Pachonians numbered 7000, and in the fifth century 100,000.[17]

St. Aphratus, 300 A.D., ate only a little bread daily after sunset.

St. Serapion, about the same time, with 10,000 monks, took their pay in wheat; lived upon a small portion of it, and gave the rest to the poor.

For six years St. Hilarion lived on fifteen figs a day, for three years on a pint of pulse a day, for three years on dry bread, from his sixty-fifth to his eightieth year on 5 oz., and after that on 4 oz. St. Anthony on bread and water; St. Gregory

Nazianzen on bread and herbs; St. Martin of Tours on roots and herbs; St. Ambrose on one meal a day; St. John Chrysostom on one meal of bread and herbs; St. Genevieve on barley bread and a few beans; St. Augustine on herbs and pulse; St. David of Wales and his monks on vegetables; St. Benedict on bread and water; St. Columba kept perpetual fast; St. Ulric, very feeble in infancy, grew strong on one scant meal of vegetables a day; St. Bernard subsisted on coarse bread moistened with water; St. Dominic and his followers rigidly abstained; St. Francis lived on bread and water, and "was the friend of everything that suffered or rejoiced"; St. Charles Borromeo on brown bread and chestnuts—when remonstrated with for his meagre diet he said the Chrysostoms, the Basils, and the Spiridions, though engaged in the most arduous labour, lived to be old, keeping perpetual fasts; St. Catherine of Siena on herbs, seldom eating bread; St. Francis Borgia, St. Philip Neri, St. John Francis Regis, St. Alphonsus Lignori, "men of wonderful power and activity of mind, lived upon a very spare diet of bread, fruits, and vegetables."[18] So we are told.

Clement of Alexandria wrote:[19] "Some men live that they may eat, . . . but the Instructor enjoins me to eat that we may live."

"Food . . . is to be simple, truly plain, as ministering to life, and not to luxury." "And the life to which it conduces consists of two things—health and strength—to which plainness of fare is most suitable, being conducive both to digestion and lightness of body."

. . . "Antiphanes, the physician, said that this variety of viands was the one cause of disease."

. . . "Those who use the plainest fare are the strongest and healthiest, and the noblest."

"Artorius, in his book *On Long Life*, thinks that drink should be taken only till the food be moistened, so that we may attain to a longer life."

The Scythians, Celts, Iberians, and Thracians were said to be greatly addicted to intoxication.

"Error seems old, but truth seems a new thing."

St. Theresa and the Carmelites fared simply on vegetable diet.[18]

Abu-l-Ala, the Syrian, was a poet and philosopher of the tenth century. He abstained from flesh and wine. In a controversy with Hibat, he maintained, first, that religious persons had at all times been anxious to abstain from flesh meat, and not to cause pain to animals, and, secondly, that for reasons of economy he would be a vegetarian, living on beans, lentils, and other cheap stuff. "I believed too," he said, "that a vegetable diet would secure my health." He had at this time lived on vegetable fare for forty-five years.[20]

Lucretius, speaking of the ancients, wrote to the following effect :—

"Soft acorns were their first and chiefest food,
And those red apples that adorn the wood :
The nerves that joined their limbs were firm and strong ;
Their life was healthy, and their age was long,
Returning years still saw them in their prime ;
They wearied e'en the wings of measuring time."

Hesiod gave much the same account of their fare : "The uncultivated fields afforded them their fruits and supplied their bountiful repast."

And, according to Porphyry, "the ancient Greeks lived entirely upon the fruits of the earth."[21]

Prof. Lawrence, however, thinks there is no proof, unless we admit Ovid's *Metamorphoses* and other poetical compositions, that this state of innocence, of exalted temperance, of entire abstinence from flesh, of perfect tranquillity, ever existed.[22]

Dr. Evans, surgeon to St. Saviour's Hospital, relates[23] that the Ichthyophagi asked the King of Ethiopia concerning the term of life and diet of his people, and were told that most of them lived to be 120; they ate boiled flesh and drank nothing but milk. He quotes also Plutarch's statement, that the ancient Britons began to grow old at 120. They were remarkable for their athletic form, great strength, and extraordinary capacity for bearing hardships of all kinds. Their food, says Goldsmith, consisted almost exclusively of acorns, berries, herbs, roots, and water.

I find it stated, but cannot trace the authority, that the ancient Gauls [probably some tribes], "who were a very brave, strong, and hardy race, lived very abstemiously. Their food was milk, berries, and herbs. They made bread of nuts."[24] And that "the ancient Spartans lived chiefly on grain, and the Roman soldiers who conquered the world carried each a bag of parched grain in his pocket as his daily ration.[24]

The food of the Greeks in very remote times was made up largely of acorns, beech-nuts, and barley. Later, when they ate flesh, they would use the entrails, but never the brains, of animals.[25]

When David and his people came to the camp at Mahanaim, the officers gave him "barley and meal, and parched corn, and beans, and lentils, and parched

pulse, and butter, and sheep, and cheese of kine, to eat." [26]

But there is plenty of evidence of much flesh-eating at feasts, connected with sacrifices among the Hebrews.

The Seres, ancient Chinese, lived to astonishing ages; Lucian ascribed their longevity to their drinking much water.[23] No doubt they were also frugal.

"Flesh, we know," says Evelyn, "was banished from the tables of Pythagoras and Plato, according to Porphyry; Hippocrates thought vegetables sufficient; Clement of Alexandria, Zeno, Phaartes, and others were abstainers from flesh meats." [27]

St. Jerome, 440 A.D., held up natural diet (non-flesh) as the Christian ideal and the restoration of the primitive rule of life. He quoted the apostolic saying, "It is a good thing not to drink wine, and not to eat flesh."

St. John Chrysostom (407) was of the same opinion.

St. Basil (379) said, "With sober living, well-being increases in the household, animals are in safety, there is no shedding of blood, nor putting animals to death."

Musonius, the teacher of Epictetus, was vegetarian.[28]

In the early Church there were large bodies who, in doctrine and practice, were vegetarian. Such were the Encratites and the Ebionites.

Biblias, under torture, bravely protested against the charges of murder brought against Christians, "who considered it unlawful even to taste the blood of irrational animals." (Eusebius.)

St. Paul is quoted by Clemens Alexandrinus as

having said, "It is good neither to eat flesh, nor to drink wine." But a reference to his epistles gives the impression that he did not wish to lay down any rule except as regards meats offered to idols.

Hegesippus describes James, the brother of Jesus, as practising abstinence.

In the *Testament of Jesus*, considered by Dr. Harnack to be not earlier than about 400 A.D., it appears that a bishop was then expected to eat no flesh at all, and to drink no wine except at the sacrament. The same rule holds good still among both East and West Syrians (Nestorians and Jacobites).

The Essenes were not, in the opinion of Dr. Ginsburg, strictly vegetarian.

They were noted by Josephus as leading the same kind of life as those whom the Greeks call Pythagoreans. "They are long-lived also, insomuch that many of them exist above a hundred years by reason of the simplicity of their diet and the regular course of their lives." They were almost entirely vegetarian. Their vows comprised these principles: First, that they would reverence the divine, the divine ideal; second, that each man would carefully practise justice towards his fellow-beings, and refrain from injury, whether by his or another's will; that he would always hate injustice and fight earnestly on the side of the just and lovers of justice; keep faith with all men; if in power, never use authority insolently or violently; nor surpass subordinates in dress or ornaments; above all things, always to love truth.

They are described on high authority as very healthy, superior to pain or fear, cheerful under torture by their persecutors, just, humane, and noble;

and as reaching, in many respects, the highest elevation known in the ancient world.

According to Pliny,[29] spelt was "the earliest food of the inhabitants of Latium. It is evident too," he says, "that the Romans subsisted for a long time on pottage, and not bread." "Ennius, the most ancient of our poets, relates how," during a siege, "the parents snatched away the messes of pottage from their weeping children." This spelt is "the most hardy of all the grains." Alica (*ergum lens*) is "a most delightful and most wholesome food, which incontestably confers upon Italy the highest rank among countries that produce the cereals." Alica is prepared from the grain called "zea." Fermenty or porridge of millet was used. Indian millet had been introduced to Italy within the last ten years. "Varrius states that for three hundred years the Romans made use of no other meal than that of corn." "Barley is one of the most ancient aliments of men." The gladiators were called *hordearii*, or barley-eaters. "The Greeks prefer barley to anything else for making polenta." "Hippocrates, one of the most famous writers on medical science, has devoted a whole volume to the praises of ptisan," probably similar to our pearl barley. "The Ethiopians grew only millet and barley." The Gauls have a spelt. They make a beer or sweet-wort from corn. "In Egypt they make a meal of olyra," a kind of spelt. "Campania is particularly prolific in millet, and a fine white porridge is made from it," also bread. The nations of Sarmatia live principally on this porridge, or even the raw meal with the addition of mare's milk or blood from a bled horse. "The people of Gaul and Aquitania use panic, also Italy beyond the Padus eat this with beans, which

they add to all their foods." [Panic is still employed more than any other food in the south of France, according to the translator.]

"Winter wheat (*triticum hibernum*) furnishes bread of the very finest quality" in Italy.

Sesame comes from India. "The most favourite food of India is rice."

"Beans are on sale at the present day (in Italy), and are employed for feeding cattle, and man more particularly. Bean pottage anciently occupied a place in religious services. Beans are mostly eaten with other food, but it is generally thought that they dull the senses, and cause sleepless nights and dreams."

The opinion of Socrates on diet in a well-ordered state is clear: "First, let us consider what will be their way of life, now that we have thus established them. They will feed on barley and wheat, baking the wheat and kneading the flour, making noble puddings and loaves; these they will serve up on a mat of reeds or clean leaves. . . . And they and their children will feast, drinking of the wine which they have made, . . . dwelling together in unity.

". . . Of course they will have a relish—salt, and olives, and cheese, and onions, or any other vegetables which are fit for boiling; and we shall give them a dessert of figs and pulse and beans, and they will roast myrtle-berries and chestnuts at the fire, drinking in moderation. And with such a diet they may be expected to live in peace to a good old age, and bequeath a similar life to their children after them."

In reply to objections, Socrates answered: "I am certainly of opinion that the true and healthy constitution of the state is the one which I have described.

But if you wish to see the state in a fever, I have no objection."

They will want all sorts of luxuries in the fevered state, Socrates admits; and "the city will have to fill and swell with a multitude of callings which are not required by any natural want." . . . "And there will be hosts of animals if people are to eat them." And living in this way, he says, there will certainly be a much greater prevalence of disease. "And a slice of our neighbours' land will be wanted, and then we shall go to war, Glaucon, that will be the next thing. Then, without determining whether war does good or harm, thus much we may affirm, that now we have discovered war to be derived from causes which are also the causes of almost all the evils in States, private as well as public." [30]

In another passage, Plato concludes: "Then virtue is the health and beauty and well-being of the soul, and vice is the disease and weakness and deformity of the soul. And good practices lead to virtue, and evil practices lead to vice." [31]

CHAPTER V

Diet in the Middle Ages and Later

The present tendency is towards an equality in fare among employers and employed. Labourers eat more flesh, and many of the well-to-do have learnt the value of porridge and fruit. There was plenty of flesh diet among the rich, at least in the Middle Ages. "Two courses of flesh of four sorts should suffice"; this was the *reduced* diet. Enormous feasts were provided on great occasions, as, for instance, an archbishop's enthronement. The quantities of rich food, of which details are given, are surprising.[1]

In the fourteenth century, in England the rich fared sumptuously, as they have everywhere else in nearly all ages. Pork, goose, capon, poultry, beef, and mutton were much eaten. The names of flesh-dishes are still Norman, the names of foods from plants are Saxon, showing the difference of fare between classes after the conquest. "Bread, butter, and cheese were the ordinary food of the common people, probably with little else besides vegetables." Bread was often made from grain quickly on the spot after grinding. "The leek appears to have been the principal vegetable among the Anglo-Saxons." Garden cresses and other herbs were in use. The chief fruit was the apple. Nuts and plums were grown, and

the small kernels of the pine were very extensively used. Cherries were very popular in the Middle Ages. A favourite dish was the tansie or omelet.[2]

The English, according to Chaucer, had a diet of white and black bread, milk, bacon, and an egg or two. They were healthy and happy because of their temperate diet.[3]

Fortescue, about 1539, said the French peasantry ate no flesh, "but it be seldom a little lard." Apples formed a part of their diet. They drank water.[4]

In monasteries of the Middle or later Middle Ages the following bill of fare was common:[5]—Breakfast, $\frac{1}{4}$ lb. of bread, $\frac{1}{3}$ pint of beer. Dinner, at 11 a.m., loaves, fish, beer or wine, pottage; soup, meat, and vegetables on all days of full fare. Supper, some drink and a little bread.

The Trappists, following de Rancé, observed the rule of abstinence from flesh, fish, eggs, and wine.[6]

The labouring classes in England have for centuries lived on a varied diet, consisting of bread, potatoes, cheese, vegetables, and occasional flesh, such as bacon, pork, or mutton. But for long periods bread, potatoes, vegetables in small quantity, and occasionally butter or lard and a little milk, were the common fare. Beer was much drunk, and in continually increasing quantities.

In the eighteenth century tea came, but was rarely much used; practically it was above the means of labouring people.

In the reign of Henry VII. *fresh* butcher's meat was never eaten, even by gentlemen attendant on a great earl, except between midsummer and Michaelmas. The upper classes fared sumptuously, but the mass of the

labourers lived on bread, vegetables, and gruel. A century ago the English labourers were almost wholly vegetarian. M'Culloch, writing towards the middle of last century, found the consumption of butchers' meat in London to be twice as large as in 1740 or 1750.[7] In the middle of the nineteenth century the labouring classes consumed ten times more malt liquor than in the fifteenth and sixteenth century.

The food of the Irish in ancient times was principally vegetable; they are described by Solinus as ποηφαγοι, herbivorous. Spencer and Hollingshed similarly describe them in later times as vegetable feeders. Camden said of their diet in a subsequent age: "They feed willingly on herbs and water-cresses, especially upon mushrooms, shamrocks, and roots." Ware, who wrote about the time of the introduction of the potato, corroborated this account.

Young, in his *Tour in Ireland*, said: "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." At that time potatoes and milk were the chief and almost the only fare of the peasantry.

As to Scotland, so late as 1763, says M'Culloch, the slaughter of bullocks for the supply of the public markets was a thing wholly unknown, even in Glasgow, with a population of 30,000. A small ox's carcase would last a small family a whole year.

In the eighteenth century, Dr. Johnson was surprised to find men living well on the grain which was food for horses in England. It was pointed out to

him by Lord Elibank that on this oaten fare England produced the finest horses, and Scotland the finest men.

The common food, according to authorities cited by Graham,[8] was brose, porridge or oatmeal flummery, and greens boiled with a little salt. Scarcely any flesh was eaten. Beer or milk was the drink. Both men and women were robust, and subject to few diseases, none of a nervous nature. In 1745 tea drinking was rare, and much condemned; in 1795 it was described as general, though no doubt not approaching the present vogue. The increase of tea and whisky drinking is reported to have been exceedingly hurtful to health and morals. In Berwickshire, one wrote: "The only extravagance the people are guilty of is their breakfasting on tea in the place of porridge, the constant morning diet of their more athletic ancestors. This debilitates them. The immoderate use of whisky destroys them; disease and crime invariably follow this beverage."

The fisherwomen were extremely hardy, wading into the sea in all weathers, and many were able to carry almost incredibly heavy burdens. Baskets of 100 lb. were daily carried with ease to Edinburgh, a distance of several miles, and the rest of the day was occupied with hard work.

In the lowlands of the north, to the ordinary Scottish fare were often added some mixture of barley, rye, peas or potatoes, and onions and butter.

Brindley the engineer found that his workmen from Lancashire and Yorkshire, whose fare was oatcake, hasty pudding, and water, did more work than the labourers of the south, who lived on bread, bacon, cheese, and beer.

Stubbs, in his *Anatomy of Abuses*, published in 1583, wrote: "Yea, the most of them [our forefathers] fed upon graine, corne, roots, pulse, hearbes, weedes, and such other baggage; and yet lived longer than we, were healthfuller than we, of better complexion than we, and much stronger than we in every respect." . . . "Do we not see the poor man, that eateth browne bread (whereof some is made of rye, barley, peas, beans, oats, and such other gross grains), and drinketh small drink, yea, sometimes water, feedeth upon milk, butter, and cheese (I say), doe we not see such a one healthfuller, stronger, fairer complexioned, and longer-living than the other that fare daintily every day? And how can it be otherwise?"

Macaulay[9] says that in 1685, one hundred years later, meat was cheaper than at present (about 1850), but was still so dear that there were hundreds of thousands of families who scarcely knew the taste of it. He adds that King, in his *Natural and Political Conclusions*, roughly estimated the common people of England at 880,000 families; of these families about 440,000 ate animal food twice a week, the remaining 440,000 ate it not at all, or, at most, not oftener than once a week.

In this connection some remarks of Colonel Higginson concerning the same period in his *History of the United States*[10] are apposite: "While the colonists were poor there was of necessity much simplicity of living amongst them. People of all stations made their morning and evening meal of boiled corn-meal and milk (hasty pudding), or of pork and beans, or pork and peas. Tea and coffee were not yet introduced, but home-made beer and cider were largely

employed. Bread was commonly made of rye and maize."

Sir Walter Besant[11] has told in his last volume how sumptuous the fare of the richer classes was in the time of the Tudors. "The dinners were plentiful and varied. A salad was served first, then the beef and mutton, next fowls and fish; game followed, . . . pastry and sweets came last. Honey was poured over the meat." At dessert, which followed, "an amazing quantity of sweets was taken; for this everyone adjourned to another room in winter, to the garden in summer." "The only drink was fermented and alcoholic, even the small beer which was the national beverage. . . . Vast quantities of wine were taken. . . . In drinking sack, the cup was half filled with sugar." The quantity of sugar and honey eaten made their teeth black. No wonder that gout and other disorders were a plague, and cut short many lives subject to the surfeit, and incapacitated succeeding generations. Even Milton was affected by the consequence of the prevailing habits. In the Netherlands there was the same excess of feasting, with results which had a very important effect on the history of the time, through the disablement of some of the chief leaders in the greatest conflict of that age.[12]

Tobacco was very largely used in Elizabeth's time. Smoking extended to all ranks of society. Early in the seventeenth century there were said to have been seven thousand shops in London where tobacco was sold.[11]

By intemperance in food and drink, wrote the wise Sir William Temple, public business comes to suffer, and kingdoms fall into weaknesses, distempers, and decays.

CHAPTER VI

Diet of Races and Nations: A General Conspectus

I. Europe.

England.—The common fare of the population of Great Britain up to a recent date has already been described, and will be further alluded to in the comments of physiological authorities and others on the present condition of the people. During the last century a change has taken place which has already had far-reaching effects, and will still further modify the robust character of the race. The increase of remuneration has been a source of strength so far as it has enabled the labourer to procure more abundant and better food, and in this respect the wage-earning families of to-day are given the means of thriving to a far greater extent than during a long period of our history. The fall of food prices since the establishment of free trade and the amplification of cultivated areas and of commerce, has added to the purchasing power of all classes.

But with increased wealth come increased luxuries, some of them of a kind which, indulged in to excess, prove themselves much more fatal to the perpetuation of the family and of the race than poor and insufficient nutriment.

Opinions of competent observers on this most im-

portant subject, bearing on the vital strength of the British Empire, will be found in subsequent as well as in preceding chapters. It is intended in this section to give little beyond the bare particulars of the diet of nations, and, occasionally and imperfectly, some estimate of their physical character, especially of their development in regard to muscular strength.

Great Britain, like Rome, rose to greatness from a plain and simple way of living, and, as to diet, the chief food of the people was derived from grain, roots, nuts, and fruits. The Scotch and Irish, who in the last few centuries were stronger, man for man, than the English, though much less trained and organised, subsisted on grain, vegetables, roots, milk, and occasional flesh. The rich at nearly all times had luxurious tables and animal flesh in variety—"viands," as the Normans called them,—and the names of cooked beasts were generally French, while the names of vegetables remained Saxon.

The English during last century came gradually to substitute bakers' bread for home-made; flesh for some part of their former fare; tea, coffee, spirits, beer, lemonade, ginger beer, and mineral waters for water; and during the same time the amount of tobacco consumed has enormously increased. Sugar, being very much cheaper, is also eaten in greatly increased quantities. Milk is less used, especially by children. Fish and fruit are plentiful in all parts of the country, and the consumption of fruit and vegetables has become quite general. Pork and bacon are eaten by nearly all classes. Cheese is probably used in less quantity per head, the protein of flesh meat taking its place. The diet has altogether become richer. Judging

by the heaps of sweet cakes, pastries, and pies in the shop windows, which must somehow be swallowed, and the vast manufactures of sugar-plums, jams, and chocolates, the amount of sweet stuffs and fatty meats consumed must be enormous. Eggs are largely eaten plainly cooked, and in a variety of puddings and cakes. A very large quantity, comparatively, of chemicals is eaten, owing to the adulteration of almost all kinds of food and the use of preservatives and powders.

The principal changes are these: The addition of a considerable excess to the nourishing food-stuffs; the addition of many substances which tend to form uric acid; the addition of a quantity of toxic (or poisonous) substances to the already fully nourishing fare; the addition of fruit to a full animal and vegetable fare; the disuse of plain water and the addition of minerals; the disuse in very many cases of milk and cheese; and the increased use of alcoholics.

Toxic drinks, including tea, are probably used on a larger scale in England than ever before in the world's history. Britain, with her colonies, is now by a long way the most tea-drinking nation of the world.

In Ireland potatoes and milk, and frequent whisky, formed till recently almost the only staple fare of the mass of the population. Now there is more variety, more flesh, more tea, more tinned meats, and more whisky and alcohol. Porridge gives way to inferior bread. At the same time several of the gravest diseases, notably cancer and insanity, are increasing.

In Scotland the tasty and extremely nourishing porridge has been largely given up in favour of extremely stodgy and ill-nourishing bread, and the really exquisite products of the "land of cakes"—bannocks,

scones, oatcakes, etc., with butter and cream — are almost despised in many localities. The expulsion of the people from the land of Scotland has been followed by an assimilation of habits to those of the Southron. But whisky keeps its pre-eminence, and shares with tea a dual control, which works ruin in every direction. The increase of nervous disease and of crime in Scotland is justly described as alarming, but probably the victim multitude will be the last to be alarmed.

Taking the United Kingdom as a whole, the richer and middle classes may be described as living on a diet of flesh, fish, bread, vegetables, fruit, milk, butter, cheese, pastry, and sugar, in abundance, and the labouring classes on bacon, flesh, fish, bread, vegetables, fruit, fat or butter, cheese, sugar, and pastry or sweet cakes, and on alcoholic drinks and tea. But the poorer among them leave out some of the most nourishing of these articles, and subsist wretchedly on such expensive items as watery and innutritious bread, tea, fried fish, entrails or scraps of beasts' carcases, pickles and jam, and often gin, brandy, or beer.[1]

Dr. Robert Hutchison considers that the chief fault in the diet of the working classes is excessive tea and bread. Dr. Young, of Belfast, testifies much to the same effect.[2]

The effects of the abuse of alcohol and tea will be noticed later.

Tinned foods have largely superseded fresh food, even in farms and country cottages. Heaps of empty salmon tins may sometimes be found in the labourer's garden. And the children are often fed on tinned milk, an expensive and improper substitute for new

milk, but perhaps a little less troublesome to the mother.

On the other hand, there exist a considerable number of artisan and labouring families who are temperate in their diet, who make sacrifices to give their children wholesome milk, who are moderate in drink, and even total abstainers. These are among the strongest and most trustworthy, and they are rightly held in honour. If we consider the number of mechanics in responsible positions, such as engine-drivers, foremen, skilled artisans, officers on board ship, etc., also the high quality of British labour, we must admire their temperance, success, and intelligence as heartily as we hail the victorious career of a commander or explorer. They preserve their growing sons and daughters from the common enemy, to fight when mature, in the most critical and continuous of all wars. With a better education, not in French or piano-playing, but in the conduct of life, the science of efficiency, our English stock would quickly raise itself above the present level of the mean, which tolerates apathy and fails to endow the coming generation with the elements of competence, bodily or mental.

The following details refer to the recent or present diet of districts or classes in the United Kingdom.

The miners of Cornwall, whose chief food was potatoes, were remarkably strong, well-made, and laborious.[3]

The Scotch, on the east coast, lived on oatmeal, milk, and vegetables. "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."[4] The

farmer's bill of fare which Douglas gives contains no item of animal food.

According to Twiss, in the Report of the Board of Agriculture for Ireland, potatoes and water with salt were found to nourish men completely.

In England formerly, according to Sir Hans Sloane,[5] "the poorer sort have strong nourishment from milk meats (on which feed the longest livers), butter, and cheese." He himself lived to 93, dying in 1753.

Adam Smith said that it is known from experience that grain and other vegetables, with the help of milk, cheese, butter, or oil, can, without any butcher's meat, afford the most plentiful, the most wholesome, the most nourishing, and the most invigorating diet.[6] This was, of course, the staple diet of Scotland when he wrote.

The labourers and their families of England, Scotland, and Wales lived chiefly, and most lived solely, on vegetable food.[3] In Devonshire the diet was milk and potatoes; in Monmouthshire, three pints of milk, bread, potatoes, and dripping. In Lancaster, milk pottage of hasty pudding, potatoes, butter, salt; sometimes fish or bacon.

In Pembrokeshire, bread and cheese, oatmeal, potatoes, and milk porridge.[7] In Westmoreland and Cumberland the labouring poor lived altogether without animal food. Their fare was potatoes, milk, and oatcakes.[3] Even substantial "statesmen" seldom had flesh on their tables.

According to John Smith, in the parish of Taunton the usual diet of labourers was milk and potatoes, barley or wheaten bread, and occasionally a little bacon.[3]

In Ireland there was a universal dependence on the

potato during the first half of the nineteenth century.[8] "The habit of living exclusively on this root produced an entire ignorance of every other food, and of the means of preparing it. Bread is scarcely ever seen." Captain Mann, R.N., referring to West Clare, where he had been stationed and was assisting in the measures of relief, wrote: "The population being content with, and relying on the produce of the potato as food, there was a general neglect [of agriculture] and want of any attempt at improvement."

Where the potatoes failed, Indian meal was provided. "If a man use 2 lb. of meal a day (which is twice the amount found to be sufficient during the late relief operations), a hundredweight of meal will last him fifty-six days, whereas a hundredweight of potatoes will last not more than eight days." [?]

The bulk of the people of Ireland have been until lately practically vegetarian.[9] Amongst the "very poor" of the famine districts few have eaten anything but potatoes, milk, maize, butter, oatmeal porridge, soda bread, and tea. Those who can afford it will at times add bacon and cabbage, fried eggs, jam, or tinned doughcake. Potatoes, buttermilk, tea, and whisky are the common fare. Rarely the flesh of the pig, goose, or chicken will be found on the table.

A German coal miner describes[10] the principal diet of the labourers in Northumberland as consisting of bread, flesh, and tea. The condition of the English labourer is on the whole better than that of the German, and he is much better paid. But the English cookery is expensive, and the women do not understand the art of preparing food, except as regards baking at home, which is the custom in Northumber-

land and Yorkshire. In Germany, peas, beans, lentils, cabbage, or carrots are cooked with the meat, and there is a change of vegetables from day to day.

The consumption of flesh in England has been estimated[11] at 136 lb. per head in England, 46 in France, 35 in Prussia, 84 in Belgium. The percentage is largest in London. The well-to-do classes in Europe generally are stated to make animal flesh one quarter of their diet. According to M. Payen,[12] a good authority, France consumed in 1859 $\frac{1}{6}$ lb. a day, New York and London $\frac{1}{2}$ lb. a day per head.

At a meeting of the Royal Statistical Society in November 1903, a Report was presented by a Committee of Inquiry into the Production and Consumption of Meat and Milk. The average production in the United Kingdom during the previous five years was—Beef and veal, 35·9 lb. per head; mutton and lamb, 17·01; bacon and pork, 14·61; total, 67·52. The average quantity imported was 54·24 lb., so that the total annual average amounted to 121·76 per head. Returns of the use of these forms of meat in 247 households for four weeks indicated an average use per head in different classes as follows:—Artisans, mechanics, and labourers, 107; lower middle class, 122; middle class, 182; upper class, 300 lb. The average per head of the whole population thus calculated would be 119·32.

The consumption per week of each class is 2·01, 2·35, 3·5, and 5·77 respectively. Group I. represents 73 per cent. of the population.

The above weights include bone and waste; but poultry, potted meats, tripe, heads, hearts, tongues,

and livers, and fish, tinned flesh and fish, soups, extracts, bovril, etc., are excluded.

Major Patrick Craigie, the President of the Society, in his address, stated that food had been defined as "all that we eat, drink, and inhale." The present report only dealt with the consumption of some kinds of flesh meat. The import of animal flesh of a certain kind had multiplied by 13 since 1857. In 1857–59 people consumed 5 lb. per head of sea-borne flesh, now 53·25 lb. One was tempted to ask whether the physique of the nation had been bettered or deteriorated by the much larger and sometimes wasteful use of meat, tea, or tobacco which the figures suggested.

In an article of the *Edinburgh Review* of 1875 I find this passage :

Dr. Edward Smith, who in 1864 conducted an extensive inquiry into the food of the agricultural population, wrote : "The agricultural labourers of England, apart from their families, regarded in a general manner as a class, are not ill-fed, and their known longevity, with the favourable rate of sickness, can only be supported on that conclusion." "Meat or bacon was consumed [occasionally] by 99 per cent. of all the families included in the inquiry in England."

Canon Girdlestone, on the other hand, described the diet of the common labourer of North Devon as follows : "He breakfasts on hot water poured on bread and flavoured with onions ; dines on bread and hard cheese, with cider, very nasty and sour, and sups on potatoes and cabbage greased with a tiny bit of fat bacon."

The article proceeds : "Let us contrast with this

the food of the Northumbrian, who lives on porridge, scalded oatmeal, barley, and pea-flour made into cakes, bread of whole meal and fine flour, milk, cheese, and butter, home fed and cured bacon. Mr. J. E. Kebbel calls attention to the curious fact that where this diet has been superseded by tea, coffee, and butchers' meat (as is the case in the south of the country), there is a marked falling off in the physical energies of the people."

The letters of Mr. Osborne (S.G.O.) to the *Times*, afterwards published in book form, contain much information as to the way of living, and the hard lot of the labourers of Dorsetshire, under the heavy pressure of "the landed interest." They are fully and truly descriptive.

In 1815 the factory workers in the north of England rose between 4 and 5 a.m., hurried to the mill without food, breakfasted at 8 on bread, or milk, and meal porridge, and tea or gin; at 8.40 worked again, and continued till 12, when an hour was allowed for a rush home and back, and for a dinner consisting of boiled potatoes, sometimes with lard or fat, or a piece of flesh; at 4 o'clock a small tea was eaten during a pause of twenty minutes; the labour was then resumed, and old and young remained in the crowded factory till 8 or 9 in the evening. The result was deformity, ignorance, misery, immorality, and early death.[13]

The people of the Hebrides, Lewis, South Uist, etc., and their immediate ancestors, have endured great hardships, especially from want of food.[14] Formerly they were fairly distributed over the land and lived tolerably well on the produce of their gardens, and on

fish and fowls. "In old days cabbage and green kail were freely grown in South Uist, but after the evictions the people had no ground, even if they had the heart to cultivate it, and they fell back on certain wild vegetables." Goosefoot, wild mustard, young nettles, and seaweed, were eaten. Fish, seafowl, and poultry are now part of the diet, but the life is much harder. In South Uist the women are very hard worked; their houses have no opening windows and no chimneys. The women become prematurely aged, bowed down with rheumatism, depressed with dyspepsia. The men, with their outdoor life, are physically much superior. "We learnt, what was sufficiently obvious, that those people of South Uist and Barra who survived starvation died of the teapot. And indeed 'the cup that cheers' is the curse of these islands, in a degree never reached by the whisky of old times." . . . "The teapot stands by the fire the whole day." "Chronic dyspepsia accompanies the ever-present teapot." "The food consists largely of potatoes—often of very inferior quality—unfermented bread, often made of home-grown flour, musty, poor, ill-prepared, with, at best, the addition of boiled fish."

Of South Uist: If anything on God's earth would seem to be beyond hope, it would seem to be this island. They have largely lost the ease of manner and frankness characteristic of the islands; they seem to have acquired some of the qualities of those who are crushed body and soul. It is "a tragedy which shames our civilisation." Water is unfit for drinking. Trout, rabbits, and game are not allowed to be taken by the people; even the sea-weed, when it comes, and when the land agent gives leave to the people to get

it, is hardly worth gathering, yet they crowd down and work on at getting it by starlight with the hideous intensity of starvation.

"Thousands were evicted from homes in Lewis . . . and from Tiree, . . . and those who remained were driven for the most part to little patches of bog and moor, the most barren of the whole district, while the country, fertile from the labour of their forefathers for centuries, was laid waste to make room for sheep. No sooner had they, by industry and frugality, redeemed these [patches] than the landlords, seeing the profit in acquiring what before had been valueless, drove them on to barren strips of sea-coast, where from the sea alone they could hope for sustenance."

The heath was set on fire, the cattle starved, the houses built by the natives or their forefathers were pulled down and set on fire, many of the people died of hardships and cold. The barns, kilns, and mills were burnt, except what the land agent was likely to require.

In Eriskay there was a similar process, hard work for life, eviction, redemption of fresh and worse ground, eviction again.

The women are said to be exceptionally strong in childbirth. Apart from the influenza plague, the islanders seem strong and healthy. A little time ago there were three people over ninety out of about two thousand.

In the Report of the Crofter Commission it is stated that "much decency, courtesy, virtue, and even mental refinement survive in the sordid surroundings of a Highland hovel." All who knew the Highlands forty years ago must agree with this opinion. The

Commission, composed mainly of landlords, reported: "The crofting and cotter population of the Highlands and Islands, small though it be, is a nursery of good workers and good citizens for the whole Empire. In this respect the stock is especially valuable. By sound physical constitution, native intelligence, and good moral training it is particularly fitted to recruit the people of our industrial centres, who without such help from wholesome sources in rural districts would degenerate under the influence of bad lodging, unhealthy occupations, and enervating habits. It cannot be indifferent to the whole nation to possess within its borders a people hardy, skilful, intelligent, prolific, as an ever-flowing fountain of renovating life." These are weighty words and kindly intended, but, as a matter of fact, the flow of good blood to the "industrial centres" is a very costly drain on the system, and without a speedy reform of the land laws throughout Scotland, "the fountain of renovating life" must soon cease to be copious or "ever-flowing." The crofter, who exists exceptionally, and only in a few districts, "enjoys," according to Lord Napier,[15] "an uncommon share of vigour and longevity."

Orkney turns out a larger number of young men who enter college as students than any other county in Scotland in proportion to population.[16] The islanders, except in Kirkwall and Stromness, are almost entirely vegetarian, and live on the produce of their soil. They are exceedingly robust and finely built, expert farmers and sailors, tender in their treatment of animals. An instance is given of a pony fifty-two years old, treated by his master with constant consideration, and at that age still sure-footed and useful.

In the Shetland Isles the people live largely on bere, an inferior barley, and the bread made from it. Fish is much eaten. Tea is drunk many times a day in large quantities boiled, and the people are consequently rapidly losing in health, strength, and appearance.[17]

In the Orkneys oatmeal porridge, potatoes, and milk are largely eaten, and fish occasionally. Tea is drunk to excess with disastrous results. Black currants are much grown and preserved. In the towns a certain amount of flesh is eaten. In Caithness and Sutherland the shepherds occasionally eat mutton, but only when tainted with disease.[17]

In the towns of Scotland flesh is much eaten; the distinctive Scottish diet has almost disappeared. White bread [of an exceedingly lumpish quality], eggs, bacon, and tea have taken the place of the "halesome parritch." The excellent "Scotch broth" of mixed vegetables and barley is now seldom seen. Dried fish, mutton, and a very wretched kind of pork are much eaten. In the remote districts "kail-brose," shredded greens, and oatmeal, over which hot water is poured, is eaten with or without milk. Oatmeal with butter, salt, and sweet or sour milk was long a favourite diet; so was "pease-brose." The bread and tea which have supplanted the wholesome and more tasty national dishes seem to be responsible for a vast increase of physical infirmities, and even of crime, and of a very notable loss of strength in the Scottish people.[17]

The author has seen the strongest Highlanders wrecked in their prime through the change of conditions after some years' residence in England with unaccustomed luxurious living.

Adam Smith, in his *Wealth of Nations*, wrote: "The chairmen, porters, and coalheavers, the strongest men in the British dominions, are said to be, the greater part of them, from the lowest rank of people in Ireland, which are generally fed from 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." The potato was supplemented generally by a good lot of buttermilk.

The Rev. Howard Malcolm, who had travelled much in Europe, Asia, and America, said: "The finest specimens of the human body I ever beheld I saw in Ireland, and they had never tasted animal food." It is reported that farmers in England declare that their Irish labourers who are temperate are capable of a much greater amount of labour on potatoes and buttermilk than their flesh-eating English labourers.

The chief food of the miners of Cornwall was potatoes; they also were remarkably strong.

Professor Forbes made experiments on more than 800 persons, and his tables showed that the Irish are more developed than the Scotch, and the Scotch than the English.

Physical decay is a natural consequence of the growth of large estates and the consequent depopulation of the country parts.

The States of the Church in Italy were most wretched and degraded through large, ill-managed properties which kept them dependent; on their borders were thriving peasant populations well distributed in small properties and holdings. Right habits in diet and many other respects are apt to prevail where conditions are fair and equal.

In old times the loss of an independent, frugal, self-respecting yeomanry was notably disastrous.

Pliny said: "Latifundia perdidere Italiam, jam vero et provincias" (The large estates ruined Italy, and then the provinces also). Rome, like a parasite, drew the life-blood from the provinces, and was unproductive herself.[18]

FRANCE.—The following particulars regarding ordinary French diet are derived from official reports presented to Parliament in 1871 and 1872:[19]—

Charente.—Good bread, a little flesh, vegetables, bread-soups; coffee in the morning, wine and water in the day. "Brandy is above all things to be avoided"; it often leads to apoplexy and prostration.

Cherbourg.—Soup made of beef suet, vegetables, and bread; flesh seldom eaten. In the country, soup made with pig's lard; porridge of buckwheat, butter, sour milk; cider.

Bastia.[20]—All Italians live on the flour of chestnuts made into polenta.

Bordeaux.—(Note)—Englishmen cannot be too careful to observe temperance in the use of stimulants. Debility of mind, epilepsy, and insanity result from drinking absinthe. French physicians say it has sent a great number of patients to the St. Anne's Lunatic Asylum at Paris.

Brest.—Coffee, soup, bread, butter, bacon. Soup, fish, bread, potatoes, once or twice a week. Water, wine, much spirits.

Calais.—Much the same as in England, but more vegetables.

Marseilles.—The labouring classes are frugal and abstemious. Bread and wine, and recently flesh food,

have been much more consumed with increasing prosperity, especially in the towns. The Piedmontese are always ready to immigrate and do heavy work.

Nantes and Brittany.—Vegetables, fruit, curdled milk, salt fish, sardines, shell-fish, bacon, pork, sausages. "Little meat crosses the workman's threshold." White wine; cider. There is much insanity from drink.

Nice.—Bread, soup, cheese, vermicelli, bacon, vegetables. At some seasons only bread, cheese, soup, wine. Meat is rarely eaten, except in soup.

Paris (under heading "Nantes").—The central markets offer from 4 or 5 to 8 a.m. all kinds of solid food at first hand. Vegetables are very much cheaper at the early hours than later. Bread, vegetables, pork, sardines, various meat dishes, eggs, fruit, form the common fare, and red wine and coffee are largely drunk. Black coffee and water are taken by workmen whose trade requires great muscular strength. Absinthe, a frequent drink among all classes, produces a most disastrous effect on mind and body. "There is not much hope of redeeming a single individual who has once taken to it." Brown bread, sold by the municipality at low rates, is not eaten, as a rule, by the workman.

"At Madame la Baronne's house lunch invariably consisted of three eggs, three cutlets, three boiled potatoes, three small apples, and three rolls for three persons."[21]

The richer classes in France have only two solid meals in the day; a small early breakfast is taken, and various liquids, chiefly alcoholic, in the intervals.[16] The dejeuner between 11 and 1 may consist of some such fare as the following:—Fish and soup, veal with lentils,

or beef with vegetables; then a vegetable course consisting of parsnips, turnips, carrots, potatoes, haricots, lentils, sauerkraut, cauliflower, kale, rice, or macaroni; dessert consisting of raisins, figs, prunes, nuts, creams, preserved fruits, jams, cheese, etc. The fish or meat is small in quantity compared with the vegetables. Much fine white bread is eaten at meals. The sipping of alcoholic drinks and the *café noir* are reponsible for much of the nervous disease and weakness now so common in France.

The countrymen are, on the whole, strong and healthy where not much affected by alcoholism. Bread and coffee form the early breakfast; there is a full meal, chiefly of vegetables and bread, about noon, and a similar meal, often with fruit, in the evening. In *Normandy* the diet, almost wholly vegetarian, includes bread, vegetables, eggs, and cider: in *Finistère* and other parts of Brittany it is similar, with cold water or cold tea, and too often alcohol in excess; the temperate labourers work in summer often from 3 a.m. to 10 p.m. In the *Landes* the diet is vegetables, fruit, and bread, and occasional flesh. In *Savoy* brown bread is eaten. In *Alsace, Lorraine, Meuse, Merthe*, etc., sauerkraut and sausages enter into the common diet.

Bread, cooked meat, fresh vegetables, and dried vegetables, in the proportion of 1, 0·3, 0·1, and 0·3 respectively, form the staple of the French soldier's diet.

According to M. Dupin, two-thirds of the French people lived, in about the year 1850, on vegetables, maize, potatoes (or chestnuts), without flesh.[22]

In *Corsica*, chestnuts, boiled, roasted, made into porridge, or baked with salt and water, are the staple

food of the people during many months of the year.[23] Vegetables are scarcely eaten at all, and scrofula is very prevalent. Infant mortality is high. Fish is eaten on the coast. Coffee is a very favourite drink. Few cows are kept, and goat's milk is commonly used. Blackbirds are much eaten, also the flesh of the pig, by well-to-do people. A soup made of trout, garlic, wine, tomatoes, vinegar, salt, capsicums, chillies, and pepper, may be called the national pottage. The Corsicans, on the whole, are neither energetic nor distinguished.

The French labourers have for a long time been somewhat deficient in proper nourishment. Mr. Brassey, the contractor, related that in making the railway from Paris to Rouen, the English workmen did one-third more work than the French, until after the French had been given roast beef, when the work became equal.

The division of land in France, well apportioned as it is with security to the holder, contributes very notably not only to the welfare of the family, but to the stability of the State. In rich and teeming country-sides, such as abound in France, says Madame Duclaux,[24] the excessive (?) division of property has pretty generally done more good than harm. Three acres and a cow are not usually sufficient for a family. At Voulangis, 1750 acres were divided into 10,600 lots of land. The flowers, and eggs, and fruit of France are "sources of incalculable riches."

Italy.—According to the Official Report, the food of the Italian peasant in many parts consists of beans, oil, and bread. The two latter articles are especially important in winter. Lentils, lupins, etc., are used;

flesh meat only rarely. Melons and unripe fruit often cause illness. The vilest spirits are drunk, and are exceedingly poisonous.

Naples.—Ordinary diet: macaroni, bread, fruit, vegetables, a little meat. Breakfast: coffee and bread. Dinner: bread, fruit, wine. Late meal: macaroni, vegetables, fish (sometimes), wine. Once a week, flesh. Englishmen have to avoid spirits, but may drink wine.

Rome.—Bread, macaroni (staple); in the middle classes, pork in great quantity, injurious to health.

Venice.—Polenta, made into pudding or cake, is the almost exclusive article of diet of the peasantry and labouring classes; it is eaten with a little fried fish or cheese.

In the Further Reports, it is stated that at *Bastia* all Italian labourers live on the flour of chestnuts, made into polenta.

Ancona.—Lentils, fish, maize, sometimes flesh.

Genoa.—Pasta soup, bread, cheese, lard, fruit, thin wine.

Sicily.—Bread, macaroni, cheese, pulse, vegetables, fruit, fish occasionally, flesh once a week, pure cheap wine; the labourers are hard workers. Another account[25] gives the fruit of the prickly pear as the food of the poorer part of the population throughout several months of the year. "Bread and some fruit are almost the exclusive diet of the majority of the population." But flesh is actually imported for the tables of the richer classes. The food of the peasants in Sicily is good, says Mr. Beauclerk, but their houses are "very bad indeed."[26]

According to Villari,[27] the food of the Italian lower classes consists mainly of wheaten bread or maize.

The latter is eaten as polenta, and is often preferred to bread, or even flesh, as it causes a feeling of satiety, which other or better viands cannot produce.

In *Apulia*, when the olives are pressed, the labourers often work nineteen or twenty consecutive hours.

A great deal of nutritious vegetable food is eaten by the poor, especially pulse, celery, radishes, and fruit, but very little flesh; many never taste this except on feast days. Salt fish, bacon, frogs, and snails are more usual.

A fairly well-to-do peasant has for breakfast (after two or three hours' work), bread, cheese and vegetables; for dinner a large dish of polenta, with oil, garlic, and anchovies, or a thick soup, with beans and vegetables, or macaroni; wine is drunk with the meal. The supper is similar, but lighter.

The majority of the farmers and labourers of the south have much less variety; their fare is often polenta or macaroni with little else. Sugar, biscuits, and coffee are little used, and jam is unknown.[30]

A good authority has stated[28] that the staple food of Southern Italy is macaroni, dressed in a variety of ways; of Northern Italy, polenta (maize), with fruit, vegetables, macaroni, eggs, and bread. The peasantry eat very little flesh; the majority have perhaps always been almost wholly vegetarian. They are strong and hardy; women, as well as men, can bear enormous burdens, and are most industrious. Chestnuts are very largely used by the poor, and so are tomatoes. Flesh is much more eaten in the towns than in the country.

According to Dr. Lyon the usual food of the

labouring classes in the north is crushed maize. Cattle are plentiful, but flesh meat is difficult to get.

As regards *Tuscany*, the following quotation [29] gives a good idea of a common diet :—"A gardener will bring with him the material for his midday meal—dry bread, washed down by a little thin red wine, watered grape-skins. He will probably have a hot supper of beans, salt fish, perhaps a little stew of meat or vegetables, and, of course, the good nourishing soup, which is universal."

There are places in Italy, says Mr. Beauclerk, where the peasants have never even seen wheaten bread, and live almost entirely on chestnut bread and inferior food.

In *Calabria* and much of *Southern Italy* the peasants live on bread, oil, and vegetables. The houses are very bad and dirty, and the infant mortality is very great. The herdsmen live on bread, cheese, and milk. They are very robust, and exposed to all weathers.

In *Girgenti* the Mafia still flourishes, and morality is nearly extinct in both people and priests. Uxoricide is astoundingly common. . . . "All this in the midst of vast superstition, superficial religious faith, and abject saint-worship in every hovel and house of evil."

The peasants of *Terra di Lavoro* are very simple and frugal in their habits. They subsist almost wholly on a vegetable diet, chiefly maize. They are strong and healthy. Infant mortality is small. Pellagra is unknown. At *Gaeta* the women carry great weights with ease.

In the valley of *Lucana* longevity of ninety or even

a hundred is not uncommon. In *Campagna* black bread and vegetables form the staple diet. The houses are very squalid and poor. Longevity is common, but the hard labour through thirty or thirty-five years breaks down even strong men. Except in the immediate vicinity of the cities the morality is generally pure.

In the *Roman Campagna* maize, vegetables, and cheese form the chief, often the only, food. The physical condition is excellent, and there is no pellagra. Morality is good. Women work to excess, usually for ten hours a day.

In *Apulia* and the *Abruzzi* the food is chiefly farinaceous and vegetable; flesh is not eaten; the usual soup of the labourer is bread and salt water; many live on cakes of barley and carob-beans, except at harvest-time, when they get plenty of food. The houses are most wretched.

In *Umbria* the morality, manners, and customs of the peasants are extremely good. Wages are small. Food chiefly maize; it is apparently sufficient, though only two meals are eaten—at 9 a.m. and in the evening. In harvest-time five or six meals are taken. Water fermented in leasmust is the ordinary drink. The houses are bad.

In *Ancona*, etc. (the Marches), the peasants are frugal.

In *Bologna* and the neighbouring provinces the fare is coarse bread, chestnuts, and herbs. Meat and vegetables are not much used. Soup and maize are common, and polenta and water sustain the casual labourer. The excessive use of maize seems to be harmful.

In *Liguria* the peasants' huts are hardly fit for

habitation. Land is very minutely divided. Houses in the small towns are wretched in the extreme, filthy beyond description. Garrets and hovels are crowded. In the country there are some habitations *almost* human, but cattle-sheds are always inside. The longevity is good, the infant mortality 18 per cent. [The food is not stated, but from acquaintance with Liguria I am able to say that formerly it was very simple and frugal. The common fare will be described later.]

In *Pontremoli*, etc., girls of eighteen or twenty carry 30 kilos. on their heads, men carry 45 kilos., and children of twelve or fourteen carry 20 kilos. With these they walk six to eight miles in the mountains. Heart disease is common. [On the Riviera, in 1866, and more recently, I have seen the women habitually carrying enormous weights.]

In the hill region of *Lombardy* bread, polenta, and vegetables were the staple diet of the majority. They do not get enough, and the quality is poor. Musty maize produces pellagra. On the whole, the peasants are strong and well-behaved.

In the *Venetian Provinces* and the hill region of *Verona* the diet is chiefly maize. The food is poor and insufficient. Flesh is eaten twice a year. The people rise at dawn, and retire to rest at sunset. They are robust, honest, and kindly. In the plains there is great infant mortality from the mothers being at hard work, and from the consequent deficiency of natural milk-feeding.

In *Sardinia*, the labourers receive corn as well as wages, and very great care is exercised in the baking of bread. They are well fed, happy, and contented;

the men of the country are robust, tall, brave, and intelligent.

According to Deecke,[30] polenta is indispensable to the working classes in North Italy. Beans are used in great quantities in some parts. Hazel-nuts are roasted like chestnuts. Chestnuts are very largely grown, and were largely exported. The area under chestnuts is stated to be 1,020,000 acres, less than some years ago, owing to the increased growth of chestnuts in neighbouring countries.

In *Sicily*, a rather detailed account states that the peasantry live almost entirely on the fruit of the wild cactus, Barbary figs, with a little bread and coffee. All classes are fond of pig's flesh. The richer classes eat much animal flesh, as in other countries; the favourite dish is veal, stewed with macaroni. Almonds, apples, figs, olives, and grapes are eaten by the labouring classes. At Messina, fish is largely consumed. On feast days, a favourite dish is grated chestnut, sugar, and goat's milk cream baked into a soufflée, with salted almonds, dried figs, and olives.

The Sicilians are not particularly strong; nor energetic, intellectual, or long lived.

The author of the article on Sicily in the Supplement to the ninth edition of the *Encyclopædia Britannica*, however, gives a very favourable account of the Sicilian workman. Industry, order, and sobriety, bravery, and a high moral sentiment are common, and the condition of the peasant in the zone of *small* properties is bearable. The diet of the people is bread, almost exclusively.

Villari and others describe the condition of the sulphur miners as most horribly degraded.

In *Lombardy* and *Venetia*, says this author, the majority of day labourers and small farmers eat less than a well-to-do peasant, sometimes nothing but polenta or macaroni.

In his recent book on the Riviera, Mr. C. Casey says :[31] "The regular dinner of a labourer is a lump of bread covered with slices of tomato, and smeared with olive oil." Butter is not to be had away from the coast. The Romans seem to have begun and ended their dinner with olives : "Inchoat atque eadem finit oliva dapes."

In the mountain villages north of Nice the poorer folk subsisted until quite lately on the fruits of the *castanea vesca* [the chestnut].

"Polenta, or Indian corn porridge, is the chief food of the Piedmontese." . . . "These Piedmontese do the hard manual work of this part of the world ; they work as navvies, porters, and so forth. They are, many of them, powerfully made." They are tall of stature.

[The pellagra, a fatal disease, is alluded to as affecting maize-eaters ; it is now known to be caused by mouldy or microbe-affected maize, in bad condition.]

The lazaroni of Naples are stated[32] to have lived chiefly on coarse bread and potatoes, and slightly acidulated water. They were a tall and robust class of men.

Millet was largely used in Italy and the Iberian peninsula, and is a nutritious food.[33]

Spain.—The Official Report states that at *Alicante* salt fish, oil, rice, potatoes, and beans form the staple. Flesh is very seldom eaten. In *Cadiz*, bread, oil, garlic, some fish or pork occasionally, fruit, and water

are the fare. The people are frugal. In *Andalusia*, bread and vegetables in winter, and cucumber and bread soup.

In the *Basque Provinces*, "puchero" soup (vegetable), a little coarse meat or stockfish, oil, pease, lard.

In the *Balearic Isles*, bread, rice, potatoes especially, pulse, fish, a little flesh, fruit, coffee.

Rose, in his *Untrodden Spain and her Black Country*, said of the Spaniards: "Their fare is the very simplest. Bread and fruit, with now and then a wineglass of rough red wine, is the staple of their sustenance."

"At 11 a.m. the Spanish labourer will have a good hunk of bread and some fruit or lard. It is perfectly marvellous on how little support a Spanish labourer will work, and, what is more, work well; he scarcely ever tastes meat. Fried fish, when he can get it, peas, melons, bread, coffee, sweet batatas, tomatoes in oil, a kind of egg-plant boiled in oil,—on such sustenance as this the dock labourer will lift heavy weights week after week, the soldier will march. . . . We all know that no soldier can march as does the Spaniard."

The miner eats more flesh, also more fruit. Bread, fruit, vegetables, oil, potatoes, capsicums, goat flesh, constitute the miner's fare. Bread and fruit always are the main theme. All classes eat fruit largely; "every mother gives her child daily three oranges." The servants are stronger, work harder and more willingly than their fellows in England. Lettuces, onions, beans, egg-plants, oil, goat flesh, tomatoes, fruit, and bread are their usual fare.[34]

Portugal.—The Portuguese, like the Algerians,

subsist largely on the olla, which resembles the kous-kousou of the Algerians, the staple dish of neighbouring North Africa, a "mess of pottage." [35]

Vegetable soups are almost unknown. The cake most popular among the lower classes is compounded from maize flour, carbonate of soda, salt, olive oil, and honey. The Portuguese are very fond of stewing their food of almost every kind, and thus obtaining it in the most tasty and digestible form. Fish, flesh, fowl, fruit, vegetables, farinacea, are converted into stews, not permitted to boil, but only to simmer gently and slowly. This custom seems very favourable to health and strength. Amongst the lower middle-class a mess of fish stew, with rice, red pepper, garlic, sardines, spices, olive oil, and milk or water, is much in vogue.

The water-carriers, a fine, strong, muscular set, honest, industrious, and gay, live on a plain fare of bread, olla podrida, roast chestnuts, and other fruit; and on feast-days add olives, figs, and oranges.

The Official Report describes the diet at *Oporto* as consisting of maize and rye bread; broth with a little meat, cabbages, rice, haricots, gourds, turnips, or onions; dried fish, common wine, a little tea or coffee.

SWITZERLAND.—According to the Official Report, the following was the usual fare:—Bread, cheese, potatoes, vegetables, fruit. Flesh once a week, in small quantities, in the country. In the towns, much more flesh. The reported consumption of flesh is 47 lb. per head, against 68 lb. in England (about 1870), but it is probably really much less, as in the 47 lb. the large amount consumed by foreign visitors is counted. Much milk is drunk. All classes live frugally, and chiefly on

a vegetable diet. They all drink coffee with milk at least twice a day, generally with much admixture of chicory. Breakfast: coffee and milk, without sugar, and bread. The better paid add cheese, butter, or fried potatoes. All dine between eleven and one; the labouring classes have soup, potatoes, vegetables, bread, and black coffee. The supper is like the breakfast.

In Fribourg canton the consumption of flesh is 60½ lb. per head. In Tessin canton, polenta replaces bread to a great extent. There is much wine drunk in that canton and in French Switzerland; in the German-speaking cantons, beer and spirits are largely drunk.

"The vegetable diet adhered to by the Swiss appears to have no ill effects, for as a race they are strong and healthy." Foreigners appear to thrive equally well on a flesh diet. The lower orders are usually hard drinkers. The working day is reckoned at thirteen hours.

At *Zürich*, flesh meat is said to form the staple. The people of *Berne*, according to a writer[36] of early last century, were very strong and active; their diet was chiefly maize and water. Many of the peasants of Switzerland were vigorous on a diet consisting of little else but bread, cheese, and water.

Mr. Jellinger Symonds, H.M. Inspector of Schools, wrote:[37] "The canton of *Appenzell* presents the maximum of prosperity and contentment among the peasantry of Switzerland," "the most enchanting picture of the happiness of the artisans." Mr. Chambers said:[38] Switzerland presents a spectacle of humble independence and happiness which is exceedingly pleasing to contemplate. Sismondi[39] wrote that the people are happy and thriving, the women vigorous and healthy. The common food in Switzerland was

groat gruel, soup, dried flesh, flour cakes, milk, and fruits; recently bread and coffee and potatoes, milk and flesh meat, have come more into use.[40] Milk, bread, potatoes, coffee, and wine are the common diet in the canton of Schaffhausen. Prof. Vulliamin wrote: In the canton of Vaud, coarse bread, milk, and vegetables were formerly the chief foods; now white bread, potatoes, and flesh or pickled flesh are common. Breakfast consists of coffee, or a thick porridge with cheese and whey, and often potatoes. At 10 a.m., cheese. For dinner, soup and green vegetables, bacon, potatoes, cheese, salad, pickled meat, and pancakes. The frugal peasant makes his meal of bread, cheese, and common wine.

In the towns flesh meat, soup, bread, and vegetables are eaten.

According to the *American Encyclopædia*, the peasants of some parts of Switzerland, who seldom or never taste anything but bread, cheese, and butter, are a vigorous people.[41] In *Switzerland and the Swiss* an American resident says: "The people, even the better classes, live very plainly, and the lower classes very poorly. With many of the working classes meat is a rarity, and a few scarcely have it at all. . . . Adulterated coffee, soup, potatoes, bread, sour wine, and milk, these make up the usual rations of the Swiss workman." Many workmen have five meals a day; their lunches, consisting usually of black bread and poor wine, are taken in the open air. The women, whose work is embroidery, lead a hard life, and live on goat's milk, coffee, and potatoes, morning, noon, and night. A little honey and an occasional bit of meat on Sunday are luxuries.

The woodmen of the mountains live almost entirely on a very simple fare, consisting of a mixture of flour, water, butter, and salt, fried. They eat this three times a day with a munch of bread. Rarely, they add a little bacon. These men are extraordinarily hardy and robust, and display limbs "of truly gigantic power."

John Addington Symonds has given a remarkable description of the strength and beauty of a young Swiss gymnast, "whose height was 6 feet 2 inches, who had the legs of an Apoxyomenos, the breast and arms of Apollo," and whose abundant vitality was especially striking as he moved across the screen of the distant trees. The Swiss generally, however, are not of a fine build; they are hardy and enduring, and excel as wrestlers and athletes. Probably the large drain of Swiss mercenaries and Swiss guards to foreign countries in recent centuries has deprived the country of much of its tallest and strongest stock. As to intellectual strength, it is fairly high, but men of remarkable ability have been rare. The Helvetii, who were greatly distinguished among the bravest antagonists of Cæsar, were destroyed and scattered by him, and their country passed into the possession of migrating Teutons and Gauls.

"Taking them as a whole," says Mr. A. T. Story,[42] "the Swiss are a strong and healthy race of men, although in many districts the unfavourable influence of the factory, and still more, that of alcohol, have made themselves felt. . . . Scarlet fever and typhoid combined kill 339, wine and beer 465 victims in a single year. . . . The Swiss are, as a rule, well built and remarkably tough of fibre." After long residence

among the Swiss, the author conceived for them "the very highest respect, and even admiration." Drunkenness now is one of the worst sins of the country; the alcohol consumed is at the rate of £4, 8s. per head. The people in the more pastoral districts live very simply, flesh meat is rarely put on the table, save at times of festivity or of friendly visits, when the display is sometimes lavish. Potatoes form a considerable part of the daily fare; with buttermilk and bread they often constitute the daily meal. Milk and its products bulk very largely in the daily dietary of the pastoral districts. Bread is often replaced by dried fruit or by curds. Many delicious dishes are made from cream. In Uri sweet cheese curds stewed in cream, and afterwards baked with fresh butter, are regarded as a great delicacy and much esteemed.

Boys and girls do not pluck unripe fruit as they do in England. "I shall never forget the cry of horror or disgust which spontaneously burst from a group of boys who were fishing in the Aar when they saw an Englishman draw down the bough of a plum tree and pluck a still green fruit. It was as though he committed some sacrilege."

"The plainness of the fare on which these people [peasant-farmers] thrive—and it is much the same all through the Alps—is another reminder of how close, when with them, one may get back to nature and natural ways. Bread, cream, curds, butter, cheese, dried or fresh fruits—these are the things on which you chiefly feed. Meat is a rarity." Coffee "is almost the only exotic," and is made with milk alone.

In the Schwytz canton the people have long lived on plant food, without flesh. They are a fine set of

independent mountaineers, and from this canton the freedom of the Swiss was born.

GERMANY.—The Official Report states that in *Saxe-Coburg* the following fare is common :—Porridge, dumplings, potatoes, bread, beer ; very little meat.

In *Saxony.*—Bread, butter, cheese, coffee, soup of meats and vegetables ; beer or brandy : this represents the average or artisan's diet. The diet of labourers in the country has less meat in it ; in the Iron Mountains bread and potatoes are the fare ; meat is rarely eaten ; the drink is thin coffee.

At *Leipzig.*—Bread and butter, cheese, sausages, meat occasionally ; beer or brandy. In the villages the fare is plainer, and coffee is often made from roasted barley. Rye bread is the staple.

In *Hesse-Darmstadt.*—Black bread, vegetables, some animal flesh ; cheap, wholesome beer.

Würtemburg.—Cold meat, ham, sausages, bread, and cheese ; weak beer.

Bremen and N. W. Germany.—Much flesh, rye bread, peas, beans, lentils, beer, coffee with chicory ; little intoxicant.

Dantzig.—Rye bread, milk, potatoes, vegetables, pork, beef ; a little sugar.

Königsberg.—Rye bread, peas or potato pottage, bacon or fish, vegetables ; chicory coffee. The diet is healthy. Unripe fruit causes illness occasionally.

Prussia.—Fresh meat exceptional ; moderate spirit-drinking.

Oels, Pomerania. — Wheat, rye, barley, peas, potatoes, butter, milk, beer, brandy, flesh (sometimes), salt.

Neurode.—Bread, potatoes, peas, millet grits, milk.

Pless.—Rye, potatoes, cabbages, milk, butter, salt.

Standel and Wernigerode, Prussia.—Rye, potatoes, pork, butter.

Westphalia, Rechlingshausen.—Bread, vegetables, potatoes, butter, flesh.

Koesfeld.—Black and white bread, flesh, milk, coffee, chicory, salt, etc., butter, potatoes, vegetables. Total cost per year, £7, 10s.

Lippstedt.—Potatoes, corn, flesh, butter.

Rhenish Province, Essen.—Meal, bread, potatoes, pulse, rice grits, vegetables, flesh, butter, milk, salt, coffee.

Galenkirchen.—Bread, butter, potatoes, fat, cabbages, coffee.

Gummersbach.—Potatoes (1800 lb.), bread (1200), oatflour, butter, bacon, milk, coffee, flesh, vegetables.

Jülich and Montjoie.—Potatoes, bread, coffee, flesh on holidays.

Ohrweiler.—Bread, potatoes, flesh, fat, salt, butter, flour, coffee.

Wittlich, Berncassel.—Bread, potatoes, vegetables, fat, salt, coffee.

Hamburg.—A few years ago [date 1870] drunkenness was quite unknown among the German labourers. Of late the practice of drinking spirits has prevailed among the foreign workmen.

Chestnuts are a staple food in parts of Germany and Spain, replacing bread.[43]

According to Count Rumford, the Bavarian woodchopper, one of the hardest workers in the world, and the hardiest, receives for his weekly rations one large loaf of rye bread and a small quantity of roasted meal. Of the last he makes a soup with salt, and with it eats

his rye bread. Water is his only drink. He works harder and has a better digestion than the average Englishman or American. [This was nearly a century ago.]

The peasantry of the Bavarian highlands have for many generations lived upon a diet from which flesh is practically excluded; it consists of grain, pulse, salads, vegetables, some fruit, and milk. They are strong, active, healthy, well developed, and work the full day. They are good walkers and climbers.[44]

According to a recent account,[45] "the German brown bread is made of three parts dressed rye, one of flour. The black rye bread given to the German soldier and sailor is most nutritious, being made from undressed rye without yeast. Fermented dough from a previous baking is used as a leaven. The German peasantry eat white with black rye bread as a sandwich, and on this do a hard day's work. There is another kind of black bread, more delicate and sweet, called 'pumpernickel.' The English lose the required gluten by eating the dressed rather than the undressed cereals, and eat more flesh than any other European nation."

AUSTRIA.—In the Official Reports[46] from Austria, the statement is made that bread, vegetables, and wine in Austria are good; burnt barley instead of coffee and tea is very strongly recommended; high health is unattainable with the habitual use of tea, coffee, spirits, or anything else that acts perniciously on the nervous system, and "the deprivation of these luxuries, with their attendant expenditure of nervous force, is far more than compensated by the serenity of mind resulting from abstinence from tea and coffee." . . .

"Tea and coffee are the sure destroyers of the nervous and muscular system."

The beverage of the workpeople is the common wine of the country, very cheap and light; the beer of Vienna is better than English. Intoxication is rare in Vienna.

Another account describes the diet of the upper and middle classes, as like that of other parts of Europe. The labouring classes eat pork, flour dumplings, milk, eggs, bread, and cheese. In Tyrol a good deal of flesh is eaten by the peasantry; in Upper Austria large numbers live almost entirely on vegetables. The wood-cutters of Tyrol subsist on cooked flour, with water, butter and salt, and bread; occasionally pork. They are very strong and hardy.

In parts of the Austrian highlands, potatoes, milk, butter, and cheese form the sole diet; flesh meat is not seen. The people are healthy, hardy, and strong.[47]

HUNGARY.—The food of Hungarians is extremely varied. There is a great variety of loaves, cakes, and rolls. Milk-rolls, salt-rolls, carraway bread, and others, such as cakes, with grated chocolate, pounded nuts, walnuts, chestnuts, almonds, rice, maize, and rye-meal, are common. Chestnuts, plain boiled, or in many forms, such as stewed with cabbage or syrup; walnuts; black dried plums stoned and filled with nuts; fruit salad, with a little wine and whipped cream; fruit in great quantity and variety, and melons, cucumbers, and mallows are largely eaten; also the seeds of sunflowers and poppies. Coffee or tea with a roll and butter frequently form the early breakfast. At the midday meal, bread, some flesh food, and fruit appear; figs and prunes stewed in sugar are much eaten by all classes.

Spinach, carrots, and lentils are boiled, passed through a sieve, and served with a little cream or butter and toast. Fowls are eaten almost daily, also peas, beans, and mashed potato with wheat-flour like macaroni. Wheat, whole-meal, rye, barley, maize, and mixed meal breads are largely eaten; "family" bread is baked very slowly in wood ashes. Curd made from the skimmed milk of cows, sheep, goats, and asses, is salted and eaten fresh. This is found everywhere in Hungary. The peasants seem to live largely on vegetables, breads of various sorts, fruit, and occasional flesh.[48]

"The Polish and Hungarian peasants from the Carpathian mountains 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 would march forty miles a day, and be fresh for further duties next morning.[49]

In the *Carpathians* the various races, Silesians, Slovaks, Saxons, Wallachians, Moldavians, Bukovinians, Roumanians, and Turks, are all, in the main, vegetarians. All live on grain food to a large extent.[50] Their diet is as follows: Black bread of barley and rye, onions, goat's milk, cheese, salt, in some parts; oatcakes, brown bread of barley, rye, and wheat, buffalo milk, eggs, and whole-meal puddings, in other parts; white bread, cow's milk, fruit, and vegetables, in others; maize bread, maize porridge, fruit, and various kinds of cheese, in others. Some people add a little fish, or bacon, or lard; a few use butter. Many eat cooked fungi. Brandy is very commonly used in some form. Tea and coffee are almost unknown, except in certain small areas. The Turks abstain from intoxicants and from flesh food on principle. Thin cheap wines are drunk

in some parts. As a rule, the frugal fare is confined to the mountains; on the rich plains beef and mutton are included in the common diet.

The *Slovaks*, who live on a sour fermented decoction of bread, with milk, bread, and eggs added, are slow, dreamy, pious, ignorant, and fatalistic; not remarkable for strength in any way.

The *Wallach* men are feeble, superstitious, demonstrative, and excitable; the women are active and strong physically and mentally. They do not live on the Slovak soup. Fruit forms a part of their dietary.

The *Saxons* live on farinaceous dishes, butter, cheese, milk, fruit, vegetable soups, bacon, coffee, and a little cheap wine. They are big, strong, practical, clean, orderly, severe, silent, hard-working, and unromantic.

The *Szeklers* and *Magyars* are splendidly built, handsome, energetic, poetic, inventive. Their diet is like that of the Saxons, with the addition of a little flesh and light wine. Fried potatoes with pickled cucumbers and brown carraway bread is a favourite daily dinner; their common drink is half-and-half coffee and milk.

The *Roumanians* are tall, handsome, proud, and fond of ornament. Their food consists largely of maize, fruit, poppy-heads, and sunflower seeds,—the two last being eaten raw, sprinkled over dumplings.

All these races are described as, on the whole, good-natured and orderly.[50]

SCANDINAVIA.—Grain food and milk, with their derivatives, form the staple food of Scandinavia.[51] "Skyr," curded sheep's milk, is stored in barrels for

winter use, and eaten with sugar or cream. A story is told of a Dane who performed most uncommon feats of strength with this diet; he is said to have carried a stone which required many men to lift it to his shoulders.

A meal in Norway is described by one traveller as consisting of sour milk, thin rye cakes, eggs of sea-fowl, rich cream, and ripe fruit.

In the hotels fresh fish and flesh are found in abundance.[52] In the remote country the people rarely eat fresh meat or fish; the meat is hung up, smoked, and dried for months before it is eaten. Salt herrings are much consumed, but farinaceous food, in the form of porridge, is the staple. The bread is made of rye, or of a mixture of barley, rye, and pea-meal; this is baked twice a year in very thin layers, called "flad-brod," and stored in heaps.

Among more well-to-do people, according to Mr. F. Vincent, fish and potatoes are the staple; a variety of flesh meats are set out at the nine o'clock breakfast. At dinner, 2 p.m., soup, fish, meat, and pudding are served.

Scandinavians generally are fond of raw or smoked fish.

The Official Report describes the diet of Sweden as follows:—

Stockholm.—Beef and pork, rye flour baked in hard cakes, soup of vegetables, eggs, and milk. Bavarian beer is the beverage. Coffee at breakfast.

Gothenburg.—Rye bread, potatoes, oat or barley porridge, salt herrings, dried pork or bacon, cabbages, turnips, etc., form the basis of the labourer's food, with milk, butter, and cheese sparingly used. Fresh meat

is seldom seen. Fresh fish on the coast. A great deal of coffee; little tea.

Skarnia, Calmer, Gothenburg, Bohas, agricultural population.—Potatoes, rye, oats, barley, beans, peas, salt herrings. Pork seldom. Much milk and cheese. In the far north, barley, potatoes, salt fish. In the towns, spirits are much drunk.

According to Mr. F. H. Woods,[53] the staple food of the Swede is a hard flat rye cake, a brittle bread, eaten by all classes. In both Norway and Sweden rye bread and rye and barley bread are common. In Sweden there is an abundance of dairy produce of all kinds.

In Norway, smoked reindeer is occasionally used by the peasantry, otherwise flesh meat is scarce. Cheese is abundant, and eggs tolerably plentiful. Fish and smoked meat are often eaten raw. The modern Swedes are slow, patient, steadily industrious, but many are wanting in energy. There was much intemperance as regards drink, especially in the towns. Courtesy, hospitality, and a combined social equality and individual independence are everywhere observable in Scandinavia.

The food of the field Lapps consists chiefly of milk, cheese, and reindeer flesh. They are not highly intelligent; they were much addicted to drunkenness; they were manually skilful.

The Finns were in every respect superior; tall, well built, hardy, and industrious. They lived chiefly on corn, vegetables, milk, etc., and on fish.

In Russia and Sweden, according to Majendie, the poor lived almost entirely on some whole-meal food, maintaining a degree of health and strength beyond most whose diet is more varied and luxurious.

Du Chaillu describes[54] a dinner which probably is typical of a feast among the richer classes of Sweden. Smoked reindeer, raw salmon, eggs, anchovy; herring, potatoes, eggs, beets, onions, oil, pepper, in a "sillsallat"; hard rye bread, thin fine bread, butter, old cheese, various strong spirits, etc., formed an ample repast; but it was only a "smorgan," or preliminary appetiser. The real dinner and the wines were very like those of any other country.

In the island of Magero, "the most northern land of Europe," he found sheep and goats being fed twice a day on fish, cooked and raw.

In the Saltdal, a very primitive district, he found the inhabitants strong, healthy, and happy. There was not one emaciated or suffering from cold. The children were pictures of health, cheerfulness, and happiness. "Milk, cheese, cream, butter, flat bread, wild strawberries," and fish seemed to make up the usual fare.[55]

"Tea and coffee I find very refreshing beverages when very tired; it is a great mistake to think that the drinking of spirits refreshes the system when overcome by fatigue."

The milk of the reindeer forms a very important item in the food of the Lapps.

Gröd—porridge—is the daily dish of the Norwegian peasant. For this barley is commonly used, but sometimes oat or rye meal. Potatoes are a great staple. Fish are much eaten, also butter and cheese. Corn and pea-meal, meat, and flour with blood, are dried and kept a long time, often for a year.

In Thelemarken, one of the most characteristic

provinces of Norway, the people are tall, well built, graceful, and intelligent-looking.

"The people of Saatersdal are the tallest and most powerful in Norway, and, I think, of the whole peninsula." The average height of the men is about 5 ft. 10 in. They are unlike most of the inhabitants of Norway, in character, and appearance. Many of them are hard drinkers.

A very interesting description[56] is given of the province of Dalecarlia, which has nearly 200,000 inhabitants, in Central Sweden. The people are peculiar, primitive, the handsomest in the peninsula; independent, manly, honest, kind, religious; they have perfect social equality. And the finest people in Dalecarlia are, it is asserted, those of the district of Orsa. The men are strong, tall, and active; the women exceedingly beautiful.

The people are poor, for the farms are small and the families large. There is much serious illness among the men from the dust of the quarries of grindstones, where they work. The description of the people generally in this part of Sweden is most delightful.

As to food, it is commonly poor and coarse. "It was, indeed, a great luxury to me to sleep in the barn on the newly-gathered hay, and to feed on milk, cream, and the plain food of these hardy farmers; and I felt that my body and mind were strengthened by such a life."

In the far north, in the neighbourhood of Haparanda, the temperature is often 30° to 40° below zero. The people visited were strong and well, satisfied with their common healthy fare. By economy they man-

aged to have always a little coffee in the house for the friend or stranger. "They lived on coarse, flat bread, with sour milk, cheese, and sometimes butter, hardly ever tasting meat." . . . Now and then they would eat fish or fowl.

The Laplanders are very fond of dried powdered blood mixed with porridge.

They have "very great powers of endurance" owing to the "severe training from childhood" which they undergo. They are the hardiest of men — short, compact, slightly built. "Consumption, cancer, chills, and fever, and affections of the liver and kidneys, are unknown." The water is pure, and the drinking of sour milk prevents many diseases. "But acute diseases are prevalent." . . . "The men and women are active to a great age." Their life in the open air and simple habits and wanderings constantly on foot contribute to secure longevity. Some live to over a hundred. "Although the Lapps live chiefly on animal food, barley flour is almost always found in the kata." They mix their milk with sorrel-grass. They are great drinkers of coffee, smokers, and snuff-takers. The vice of drunkenness at home has greatly decreased.

Norway.—The general food of the Norwegians was rye bread, milk, and cheese; and, as a luxury, thin slices of flesh with salt. A common treat was oat or rye porridge, with a few herrings.[22] "All the travellers I have consulted," said Mr. Twining, "agree in representing the people as thriving on this apparently poor fare, and in no part of the world are there more instances of extreme longevity." "They are remarkably robust and healthy," wrote Dr. Capell

Brooke, "generally tall and good-looking, with manly openness of manner and countenance. They can run full speed by a carriage for ten or twelve miles."

BELGIUM.—The Official Reports give the following details of Belgian fare:—Coffee, strongly adulterated [or mixed] with chicory is generally drunk, tea seldom. Milk is scarcely used except by superior workmen. The common bread consists partly of rye. Butcher's meat is only eaten two or three times a week. Green or dry vegetables, butter, lard, fresh or salted pork, form the workman's principal nourishment. Many live entirely on potatoes with grease, brown or black bread, and chicory for drink.

At *Antwerp*, rye bread and potatoes. Coffee, black, for breakfast; vegetable soup with potatoes or rice for dinner, and fish, occasionally a little meat or lard. At four, a meal similar to breakfast; for supper, the remains of dinner warmed up. Inferior beer is largely drunk.

At *Brussels*, the young workmen ate little or no flesh. Bad bread, lard, potatoes, vegetable soup, bad milk, much weak coffee and chicory.

From another source I find that the Flemish labourer had—for breakfast, bread and butter, chicory, coffee, and milk; for dinner, potatoes, vegetables, and bread; for supper, the same. Very seldom a little bacon, and other flesh about four times a year.

THE NETHERLANDS.—In the Official Report, the following statements give the diet for various callings:—

A blacksmith uses rye bread, wheaten bread, butter, milk, coffee, potatoes, vegetables, etc.

A mason uses bread, butter, bacon, lard, coffee, potatoes, etc.

A bricklayer uses bread, butter, coffee, milk, cheese, sugar, flour, potatoes, vegetables, meal, bacon, lard, oil, etc.

A labourer uses bread, rice, lard, butter, coffee, oil, potatoes. As a rule no meat but bacon is ever tasted by the peasantry, and very little of that. They are generally temperate. According to the Further Reports of 1872, the usual fare in the Netherlands comprises bread, vegetables, peas, beans, and rice.

A recent observer describes a common Dutch fare as follows :—Breakfast, bread, cheese, and butter; dinner and supper, much the same. In some parts, porridge of oatmeal and onions. Some flesh, chiefly pork, is eaten by the peasantry. Coffee, beer, and grog are the drinks.

Another, in the Report for 1870, says the labourers earning from 10/6 to 17/6 a week have for breakfast, black, brown, or white bread and butter, coffee, milk, and sugar. The evening meal is similar. The midday dinner consists of potatoes, carrots, turnips, fish, fat, and tea. More water than beer is drunk, more vegetables than flesh are eaten. These people are remarkable for cleanliness and comfort, for their constancy in domestic and social duties, for economy, foresight, prosperity, and happiness. They prefer the Bible to newspapers, and fireside to outside meetings. They have more for their children by spending little on themselves, saving in beer to spend on bread.

Russia.—The Official Reports (1870, 1872) give the following :—

Riga.—Rye bread, various kinds of flesh and game. Beer and spirits are fearfully pernicious, being very largely drunk.

Taganrog.—Rye bread, salt, onions, lard, sour vegetable soup, boiled buckwheat or millet, and fat.

St. Petersburg.—Black bread, soup made of meat, cabbage, potatoes, mushrooms, cucumbers, etc.; tea, brandy, quass, and beer.

Kertch.—The watkey (brandy) is an exceedingly poisonous drink, and rapidly produces delirium tremens.

Berdiansk.—Rye bread, fish, cheese, eggs, sometimes pork, or meat and vegetable soup; weak beer.

Finland, Helsingfors.—Rye bread, potatoes, a little butter, milk, fish, flesh very rarely, though very cheap, 2½d. to 3d. a lb.; schnapps. Honest, good workmen, intelligent.

In the article "Finland" in *Chambers's Encylopædia*, the Finns are described as a strong, hardy race, with high mental and moral qualities. Their staple food was rye, potatoes, barley, and various fruits.

A letter from "The Helder" in the *Sun* newspaper in 1799 describes the Russian grenadiers: "The finest body of men I ever saw; not a man under 6 feet high. Their allowance consists of 8 lb. of black bread, 4 lb. of oil, and 1 lb. of salt per man for eight days."

The diet of the peasants in the interior of Russia consisted, according to Bremner,[57] of various vegetables, pickled cucumbers, cabbages, and mushrooms, and with these coarse bread and milk. Butcher's meat was scarcely used, except in the largest towns, and butcher's shops were not seen in a journey of 200 miles. Fish also is rarely sold from shops.

Mackenzie Wallace said the common fare of the traveller was black bread, eggs, milk, and tea.

Majendie described the Russians and Swedes as maintaining a high degree of health and strength on whole-meal food.

Another later observer states [58] that soup and black bread form part of the diet of all classes of Russians; the most thoroughly national soup is made of beef, cabbage, parsley, carrots, salt, and pepper. This, minus the beef, is the common soup of the peasantry. Fish, beef, veal, poultry, and game enter largely into the meals of the richer families. Russians drink first, and eat afterwards. The dinner of the middle classes is in many parts of the country and in towns not unlike that of the English, and consists of four dishes.

The "fast-diet" in Russia is very strictly vegetarian.

The Russian peasantry, generally speaking, live on black bread and vegetable soup, with smoked or salted herring occasionally, and rarely the flesh of beasts. Early in the nineteenth century the common food was rye bread, vegetables, and dried fish, such as belugæ, sturgeon, and salmon. An enormous quantity of alcoholic liquor, vodka, is drunk by the labouring folk, and this excessive tippling has been greatly encouraged by the governing authorities and police. Stepniak, in his book on the Russian peasantry, says the average peasant family leads a life of privation which would do honour to a convent of Trappists. They hardly ever taste flesh. Whole-meal rye bread, and whole buckwheat, and gruel made of grits, are dainties which they only taste during the few months which immediately follow the harvest. "The ordinary run of villagers eat bread mixed with husks, pounded straw, or birch bark." This miserable fare cannot, however, have been

common except in the less-favoured districts, no doubt a large part of the empire. A soup much used consists of the sour fermented liquor made from black bread, with a plate of solids to be added to it, namely, boiled sterlet, raw ham, cubes of cucumber, green onion-tops, lettuce, crayfish, horseradish, and sugar. Mackenzie Wallace describes a Tartar meal as composed entirely of boiled mutton, with a little salted horse flesh thrown in.

According to an interesting account by Captain S. Howland, of New Bedford, Massachusetts, the people of Russia subsisted generally on coarse, black rye bread and garlicks. "Labourers 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 men would do more than any of the middle-aged men belonging to my ship." "They were full of agility, vivacity, and even hilarity, singing as they laboured with all the buoyancy and vivacity of youth."

In the Russo-Turkish war of 1877 the fare of large numbers of the troops was, for officers, millet pudding, goat's milk, cheese, onions, and light wine; for the bulk of the men, maize, curds, and some dried fish or beef.

Poland.—The general fare is bread and potatoes. The Polish workmen are strong and enduring. A mason will walk five to eight miles and back, and work all day, on little else than bread. "The Polish

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

GREECE.—The Official Reports give the following particulars on diet in Greece:—

Patras.—The Albanians eat olives and bread, little else. Spirits should be avoided by foreigners, or sparingly used.

Syra.—Bread, olives, salt fish, fruit, vegetables; sometimes goat flesh. Much damage to health results from excess in wine and spirits.

The Greek people are described as simple, frugal, and abstinent in the extreme.

"The Greek boatmen," said Judge Woodruff,[59] who was sent to Greece by a New York committee, "are exceedingly abstemious. Their food always consists of a small quantity of black bread, made of unbolted rye or wheatmeal, generally rye, and a bunch of raisins or 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 shipyards live in the same simple manner, and are equally vigorous, active, and cheerful." They have a light supper or none at all, going foodless from mid-day dinner till breakfast. One "hearty man" in New England seems to eat as much food in a day as six of these Greeks. Yet there is no people in the world more athletic and cheerful.

Turkey in Europe.—The following notes are from the Official Reports of 1870-72 :—

Monastir.—Maize and rye bread are the usual staple ; some labourers subsist almost entirely on bread, and eat 4 to 5 lb. a day. Olive, hempseed, linseed, and sesame oils, cheese, and milk are used occasionally ; meat, wine, and spirits only on festival days by the Christians. Salt fish sometimes, pepper pods, leeks, garlic.

At *Constantinople.* — Flesh - meat soup, cabbage, beans, and cherries are part of the common fare.

Bosnia.—Flesh, vegetables, sour fruit, cheap spirits.

Epirus.—The Christian population is temperate and frugal. The day is begun with a small cup of strong black coffee ; at nine, bread and olives are eaten ; at twelve, a substantial meal. The journeymen and labourers live chiefly on maize and rye bread, with cheese, olives, or vegetables, such as leeks, onions, and garlic. Black coffee they are always sipping ; ten or twelve small cups a day is not an unusual quantity.

The military ration of the Turkish soldiers was as follows :—On five days of the week — Bread 2 lb., mutton 9 oz., beans 7 oz., rice 2 oz., butter 6 drms., salt 10 drms. On Sundays and Thursdays — Bread 2 lb. 1 oz., rice 12 oz., butter 1 oz. 13 drms., sugar 2 oz. 8 drms. Bread is the staple of their diet.

The above dietary " was well studied " ; " the Turkish troops, in bodily vigour and power of endurance, would not suffer by comparison with any men in Europe."

Rice forms part of almost every meal with the natives. The eating of unripe fruit causes much disease.

Turkey.—The Turks, in general, are described by travellers as endowed with a singularly strong vitality and energy; their excellent build, simple habits, "total abstinence," and normal vegetarian diet enable them to support the greatest hardships and to do good work on the scantiest fare.

The Ottoman army consisted largely of men of "herculean form," who were water-drinkers, and rarely ate animal flesh.

The boatmen and water-carriers of Constantinople were, in Sir William Fairbairn's opinion, the finest men in Europe as regards physical development; they were all water drinkers; their diet was chiefly bread, with cucumber, cherries, figs, dates, or other fruit, and now and then a little fish.

At Smyrna the porters carried in one load from 400 to 800 lb. This feat can hardly be excelled anywhere.

Gralot observed, in his voyage to Constantinople, that the Turks in war lived on rice, butter, and dried fruits; and that at home a "tun" of rice with a little butter and dried fruits will serve a numerous family for a year. He attributed the strength and plumpness of the Levantines to their temperance.

Further particulars of the diet and physical character of the Turks, and of Greeks, Arabs, and Albanians in Turkey, appear in the section dealing with the Asiatic continent.

Montenegro.—The Montenegrins are able to go for a long time without food, but eat colossally when food is plentiful. Loaves of rye bread, lumps of lamb, bowls of milk, and onions, are common fare on their tables. Milk and maize flour boiled in oil are the staple food. It is a hard struggle to live, and only the

very fit survive. In the lamb season flesh is plentiful. The men of Kolashin are huge and extremely strong, good hewers of stone, etc., and of splendid physique.[60]

At Belgrade, Servia, the men have a habit of drinking cold water all day, and are singularly lacking in activity.

Crete.—The Official Report gives the following as the common fare:—Coarse bread, olives, cheese, salt fish, wine, vegetables cooked in oil, grapes, figs, and melons in summer, meat seldom; abstinence compulsory for one-third of the year; large potations of water. "The stranger must eschew strong drink, though used to it at home."

Cyprus.—The people of Cyprus, who lived chiefly on bread and vegetables, were described by Hepworth Dixon as brave, sober, and faithful; the men were easily turned into good cavalry. Sir Samuel Baker was greatly struck by the strength of the monks, who lived almost entirely on beans and barley bread, with the very rare addition of animal flesh. The people, during a third of the year, ate only bread and vegetables, without milk or oil.

Denmark.—Up to 1847 the potato formed the main food of the poorer classes in Denmark. Rye is now the special bread cereal of Denmark. Barley is also used, and the growth of wheat is extending.[61]

Iceland.—Salted meats, dried fish, and rice constitute the chief articles of the Icelandic dietary; coffee and brandy are largely consumed. The death-rate, especially of children, is high; parasites and entozoa, consumption, gout, and rheumatism are very prevalent. The people live in a disastrous condition of overcrowding, owing to lack of fuel. [The very large and fatal

prevalence of tapeworm is due to the dogs, which are inmates of these crowded houses; the eggs are conveyed from the hand which has touched the dog's skin, to the mouth, and reach the intestines, where they develop.] Iceland has through all known history been sorely plagued by famine and pestilence; the better communications with Denmark now prevent the destitution from becoming so fatal as formerly. Iceland has self-government; it has been long worked by two or three officials, without soldiers or police; it has only one prison, recently it had none; "rigid republican simplicity is combined with conservative pride of descent; great self-respect with perfect equality." There is great respect for law and order, love of their country and its history, and a considerable amount of education.[61]

Iceland and Greenland.—In Iceland the diet of the peasantry in winter is chiefly skyr (curded sheep's milk). It is kept in casks, and eaten with salt, pepper, or sugar candy, and the people live upon this, with a little mutton or salt fish occasionally. During the summer wild fruits, cresses, wild birds' eggs, and fresh fish and butter, are added. Bread is a luxury rarely eaten by the poorer classes; such bread as they have is black, and made of barley. Near the coast a great deal of fish is eaten by all classes. Richer people live largely on fish, mutton, vegetables, and gruel of barley-meal. The Icelanders of the country were industrious, strong, and almost free from crime and dishonesty, but one-sixth of the deaths were caused by worms derived from dogs which share their houses.

The Greenlanders, unlike the Icelanders, are great flesh-eaters, and live almost entirely on seals, reindeer,

and other animals; they consume large quantities of fat.[62]

Those Icelanders, whose food was largely animal, with only a little vegetable, were terribly plagued with scurvy, leprosy, and other skin diseases.

Sir John Ross said that an Eskimo will eat 20 lb. of flesh or oil in one day. Captain Cochrane, in his narrative of a pedestrian journey through Russia and Siberian Turkey, said that a Yakuti can eat 20 lb. of fat and a proportionate quantity of melted butter in twenty-four hours. This was tested by Admiral Saritcheff by giving a man 28 lb. of rice and butter; it was all eaten. Even larger quantities have been testified to as eaten by Yakuts and Tongouses.

A merchant, at a banquet of "several respectable Greenlanders," counted the following dishes:—Dried herrings, seal flesh, boiled auks, putrid whale's tail, salmon, reindeer, crowberries, train oil. According to Dr. Kane, raw blubber and walrus beef were consumed freely, and narwhal flesh was found very valuable.[63]

For the expedition across Greenland, Nansen took dried meat, which was accidentally deficient in fat, also meat-powder chocolate, butter, Swedish biscuits, meat biscuits, strips of halibut, cheese, jam, sugar, condensed milk. Seals and birds were killed during their stay in Greenland. Tea and coffee were found superfluous, and coffee prevented sleep. Weak tea was found to be a very refreshing drink. But Nansen says: "My experience leads me to take a decided stand against the use of stimulants and narcotics of all kinds, from tea and coffee to tobacco and alcoholic drinks. It must be a sound principle that one should live in as natural and

simple a way as possible, and especially when the life is a life of severe exertion in an extremely cold climate. The idea that one gains by stimulating body and mind by artificial means, betrays, in my opinion, not only ignorance of the simplest physiological laws, but also a want of experience, or perhaps a want of capacity to learn from experience by observation." As to spirits, he says, "there is no sufficient pretext for using them, and the best course is to banish alcoholic drinks from the list of necessaries."

Tobacco he has found extremely harmful to men engaged in severe physical exertion, and not least so when food is scanty. It injures digestion, nervous power, capacity for endurance, and tenacity of purpose. A little may be allowed, and the quantity by degrees reduced, but "perhaps it would be advisable not to take excessive smokers or chewers of tobacco at all." [64]

It was, he says, of course a clear necessity to forbid the sale of brandy in Greenland, on pain of greatly accelerating the extermination of the race. "Not only should the sale of brandy be prohibited, but also of coffee, tobacco," and other noxious products. "It took us a long time to make them acquire the taste for them. On the west coast we have been unhappily successful in begetting the taste for coffee,[65] and this has not a little contributed to the decline of the race."

Nansen and his crew lived for long periods on bear's meat and fat without any ill effects. The Greenlanders have a similar diet.

The Eskimo revel in fat and blubber, and eat reindeer, musk-ox, birds, salmon, and berries. They are middle-sized; a few reach 6 feet; their frame on

the whole gives an impression of strength; they are fairly intelligent.

II. Asia.

China.—The diet of the common people of China, and of neighbouring countries to the south, has been for ages derived almost entirely from plants, chiefly from rice. Before the foundation of Rome or Jerusalem they were a nation, as they are to-day, living directly from the proceeds of their own careful cultivation of the soil.

The country people live practically on rice and vegetables, with a little fish or flesh occasionally. They are "hardy, capable of enduring extraordinary fatigue, obedient, and intelligent." In the towns, especially in treaty ports, they are degraded in character; and in foreign countries, although they may show great capacity and attain prosperity, they are not to be compared with their countrymen of the best districts.

The rich in China, as elsewhere, are flesh-eaters to some degree, and many of their dishes are nasty to Europeans, such as birds' nests, dogs, and other delicacies, which are supplied to an omnivorous taste.

According to Mr. T. W. Robertson Scott, Lord Wolseley said in 1895: "I believe the Chinese people to possess all the mental and physical qualities required for national greatness."

Sir Thomas Wade also gave them a high character.[66]

Dr. Rennie, at Peking, was convinced by his residence among them that the lower orders of Chinese

generally are better conducted, more sober and industrious, and intellectually superior to the corresponding class of our own countrymen.

A distinguished lady traveller describes them as the most local of peasants in their attachments, and the most cosmopolitan and successful of emigrants—sober, industrious, thrifty, orderly, peaceable, possessing great physical vitality, cheerful, contented, persevering. Their filial piety, tenacity, resourcefulness, power of combination, and respect for law and literature, place them in the van of Asiatic nations. "I like the Chinese women better than any Oriental women I know," writes Mrs. Bishop.[67] They appear to have very excellent qualities, according to this observer.

In commercial affairs the Chinese are trustworthy, but, as a rule, they are full of duplicity.

Dr. Morrison speaks of their great strength. They amble along under loads that a strong Englishman could with difficulty raise from the ground. The common fast-travelling coolies of Sze Chuan carry 170 lb. 40 miles a day over difficult country. Some carry 400 lb. Richthofen states that coolies carry weights of 432 lb. over mountain passes 7000 feet high.

The Chinese all-round labourers, according to the Chinese Minister in Washington, easily distance all competitors. They are quite extraordinary in their capacity to bear heat and cold, and their energies are sustained by a few bowls of rice.

The Chinaman eats and drinks little that has not been subjected to the temperature of boiling water or

oil, and is therefore largely preserved from typhoid, cholera, and other diseases which are caused by infected food. Concerning the quality of Chinese food, a European would generally say there is no stamina in it. Diseases, however, like rickets and gout, are conspicuous by their absence. Functional disease of the stomach and alimentary tract is less common than among Europeans, and the teeth of the Chinese are admitted by all to be exceptionally beautiful and good. "Look at the clean-limbed, muscular Chinaman of the fields! He is the picture of health and agile strength as he sings through the hottest or coldest day's work. Singing at work, which is practically universal in China, indicates a vital energy in excess of that required for the labour in hand. . . . Drunkenness is practically non-existent in China." Opium-smoking may perhaps be compared to tobacco-smoking or tea-drinking.[68]

Mr. Weale is convinced that the reason why Chinamen have failed in war is that they were badly led by incompetent officers, and badly treated. Give them good officers, he says in his recent book, and "the North Chinaman will yet make one of the finest, and certainly one of the most hardy, soldiers in the world" (p. 368). In business intelligence "one Jew equals ten Russians, one Scotchman equals two Jews, and one Chinaman equals sixty Russians." This is the Chinaman of the north, but he is far surpassed by the Chahkiang or Canton merchant (p. 318).

Roughly, the Siberian (Russian) soldier's chest measurement is nearly forty inches; he has a fine

physique and great fortitude, and is "a very sturdy fellow." A plate of soup and a hunk of rye bread are his daily lot. He seems to need nothing else (p. 494).

The flesh-eating Buriat is small, badly formed, ugly, and stupid (p. 257).[69]

The Chinese are long-lived, have nerves of steel, and thrive in any climate.[70]

The author of the *Back Blocks of China* relates that the tea-carrying coolies carry 224 lb., and some even 350 lb., on their backs.

"It is hard to find a dish in the middle kingdom that is not based upon the recipe of some sage who lived hundreds of years ago, and who had a hygienic principle in mind when he designed it. Chinese food tends much more to vegetarianism than does ours. Beef is never eaten except by Mohammedans. Mutton and pork are obtainable in some towns, but the only form of meat which one is sure of obtaining is fowl, which the Chinese know how to prepare with greater delicacy, and in a greater variety of ways, than any other people I have ever met with." "Other things one is sure to find at every well-regulated meal are lotus stems and buds, birds' nests, bamboo sprouts, pickled duck's eggs, and shark's fins.[71]

Surgeon-General Evatt describes[72] a most horrible condition of ill-health, dirt, plague, and overcrowding, in the Crown Colony of Victoria, under the Colonial Office, "the highest expression of sanitary neglect on the face of the earth." In India, Persia, Turkey, and Chinese territory, under Chinese administration, he

has never seen anything to compare for downright degradation of human life with the conditions to which the splendid Chinese workman is exposed in Hong-Kong. The plague has here become endemic—"a standing menace to the human race." "A most vigorous, virile Chinese race, full of energy, sobriety, splendid working power, and an intelligence capable of any development, is placed in shockingly degrading conditions by Great Britain."

The point, for the present purpose, is to bring out the Surgeon-General's testimony to the fine qualities of a race which for ages has been in the main living on rice and vegetables.

The author of *Things Chinese* states[73] that the U.S. Department of Agriculture gives the area of land required to support one person in China as one-sixth of an acre. Two acres support a family of five persons without outside work. Seven acres, according to Miss Fielde, constitute wealth as reckoned in China, in the Kwong Tung district. The Chinese in the country live on rice, sweet potatoes, yams, taro, beans, cucumbers, pumpkins, marrows, squashes, water-melons, etc., and sometimes salt or fresh fish, or meat. They give very minute attention to details in the cultivation of the soil. In manners, they are extremely gracious and polite to each other.

Every available spot is used for the growing of foodstuffs. The staple food is rice, millet, and sweet potatoes; the last have in recent years immensely augmented the nation's resources. Vegetables of all kinds, vast quantities of fish and pork, poultry, and game, are added to the ordinary diet by many. The population is increasing fast.[74]

Manchuria.—The tall millet is the staple food of Manchuria. It is also the principal grain feed of the numerous animals employed in farm work.[75]

It is eaten by the people with boiled flesh or pickled vegetables, like rice. An ordinary servant consumes 2 lb. a day, a hard-working man is said to eat about double, that is, 4 lb. On two days in each month grain, flour, barley, and wheat is given, and on two days animal flesh. Spiked millet is also used as a change occasionally.

Rice is grown on dry ground like other crops. Maize and buckwheat are also grown in Manchuria. The Tou-fu, or bean curd, is a product of general consumption in China. The green bean is largely used, and is manufactured into vermicelli. This bean enters largely into the native diet throughout the whole of China.

The following vegetables are grown in Manchuria :— Potato, turnip, leek, radish, onion, garlic, carrot, celery, egg-plant, taro, and, most important, Shantung cabbage, which enters largely into the diet of the people; melon, pumpkin, gourd, squash, vegetable marrow, and cucumber. The chick, a bulb smaller than the turnip, is much eaten. Seeds of sunflower, fungus, chestnuts, walnuts, peaches, plums, and apricots are grown in parts for food. Dogs and many other animals are eaten. The dogs are fed on coarse millet, rubbish, etc., but they forage outside the dog farms.

Korea.—"Upon the average, Koreans eat about one-sixth as much pulse as rice. . . . The Korean is omnivorous." Birds, beasts, fish—nothing comes amiss to his palate. Dog-meat, pork, and beef with blood undrained, fowls and game, head and claws intact;

fish, sun-dried and malodorous, all are acceptable to him. Dried seaweed, shrimps, vermicelli, pine seeds, lily bulbs, honey water, wheat, millet, barley, maize, rice, wild potatoes, and all vegetables. Their excesses make them martyrs to indigestion.

"The inhabitants are peculiarly proficient in the art of doing nothing gracefully." The peasant woman is especially "active, vigorous in character, resourceful in emergency, superstitious, persevering, indomitable, courageous, and devoted. . . . She does the work of a man in the household and of a beast in the fields."[76]

The Korean diet (at least among the richer folk) is much varied: game, fish (raw), beef, pork, fowls, eggs, seaweed, macaroni, much fruit, especially persimmon, apples, pears, and plums. They eat three meals a day—a small breakfast, large lunch, and heavy dinner in the evening. Pork and beef, barley roasted, are largely devoured. Among their victuals are hard-boiled eggs, barley, turnips, potatoes, radishes, much pepper, black sauce, and vinegar; fermented liquors and light wine and infusion from rice. Tea is not drunk by the lower classes. The Koreans, especially the upper classes, gorge themselves and stuff their children with food; they have chronic indigestion, and are heavy sleepers.[77]

Outside Seoul meat mostly consists of wild birds; bacon is obtainable, but of a repulsive sort. Rice, eggs, dirt, and dried fish are everywhere. "The men are amazingly tall and broad backed." They carry enormous logs of timber or piles of iron that would crush the English labourer to the earth. They are trained to this almost from infancy. The very girls walk along the roadways with heavy loads on their

yokes. But the people are clumsy, cowardly, and not the least athletic.[78]

Mr. Lynch describes the lower and middle classes as broad-shouldered and powerful. One frequently sees coolies carrying enormous loads.[79]

The Koreans are flesh-eaters and exceedingly voracious, eating fish raw—skins, bones, scales and all. But the common food of the poorer classes is rice, beans, spice, vinegar, rotten radishes, and sauce, and occasionally beef, mutton, pork, and dog. The men of the lower classes "possess tremendous muscular strength, but are lazy, languid, and timid." The women are more energetic.[80]

Burmah.—The majority of the men in Burmah, during the time of their "monkhood," live "a very healthy, temperate life, eating just enough to keep the body in good health." A little rice, curry, and fruit is the usual diet; no flesh. In large towns the monks frequently receive well-cooked hot meals provided by the rich. "The Burman is very fond of life, very full of life, delighting in the joy of existence, brimming over with vitality, with humour, and with merriment."

The monks only eat twice a day, and never after noon. There is only one opinion of the character and conduct of the monks—it is admirable.

The Burmans of Upper Burmah were absolutely total abstainers. The Buddhist religion forbids the use of all stimulants.

Monks may eat any food before noon. Rice, vegetables of very many kinds, sugar and cakes and oil and honey, were commonly eaten.

"Such a nation of workers was never known. Every man, woman, and child works. . . . The class

who live by other men's labour is unknown." . . . "He does not care to interfere with other nations; he thinks interference does harm." All killing is wrong, all war is hateful. "In his own idea his nation will always be the greatest in the world, because it is the happiest."

He believes in the great rule, "Let his life be kindness, his conduct righteousness; then in the fulness of gladness he will make an end of grief." (*Dammapada.*)

"Never in the world hatred ceases by hatred; hatred ceases by love." (*Ibid.*)

"Overcome anger by kindness, evil by good." (*Ibid.*)

"Love each other, and live in peace." (*Saying of the Buddha.*)

The Burmese are a community of equals, in a sense that has probably never been known elsewhere.

Their feeling towards inferior animals is compassion. They are not only reluctant to kill animals, they show perpetual care and tenderness to all living creatures.

Nothing is more beautiful than the ways of a Burman with his children and with animals.[81]

JAPAN.—The Chief Consul of the United States in Japan, Mr. van Buren, describes the Japanese as almost wholly vegetarian.[82] Beef is seldom eaten, mutton and pork still less, and fowls are too dear, except for special occasions. Fish is more commonly used, but nine-tenths of the ordinary fare is from plants. The Japanese, he says, are well nourished, well developed, and capable of great endurance in mental and physical exertion. The Japanese, unlike the Bengalese, include pulse in their dietary, and seem to be the stronger for this meat. They cultivate more than forty diffe-

rent kinds of peas and beans. They also cultivate, besides rice, wheat, barley, rye, and maize. The sweet potato or yam, the daikon, turnips, etc., are eaten, and many other vegetables for which Western nations have no substitutes.

Professor Knapp, of the Department of Agriculture at Washington, recently returned from an official investigation of the rice industry in the Philippines, China, and Japan, states: "The reason the Japanese are so muscular is that they do not polish their rice. In American mills the outside coating of the rice kernel is rubbed off; first, the outer husk is removed; second, the bran, just within the husk, is removed; third, the solid kernel is then rubbed to remove the rough protein surface and give the kernel a gloss. This is called polishing, and the material removed is called polish, one of the most nutritious substances in all cereals. Polishing removes more than three-fourths of the flavour and one-fourth of the fibre material. In Japan, China, and India polishing is not done, except for foreign markets. The Japanese out-footed the armies of Russia, Germany, England, France, and America in the advance on Pekin. The Japanese soldier is fed on rice, a ration of beans and fish. He can double-quick for fourteen hours, and repeat it for days. The Japanese or Chinese may be shot through the body, if no vital part is cut, and scarcely notice the wound." These are very important observations, and are well corroborated. Common sense is sadly wanted here as elsewhere, and even in this simple matter of food, it seems, the curse of a foolish fashion has its vogue.

Herr Heckmann, who has also lived in Japan, says

that the Japanese eat a great deal of fish, and this makes the main part of their diet after rice. In the country, rice is served dry, and eggs and tomatoes of poor quality do not satisfy the traveller. They cultivate few vegetables, and their fruits are not good. They often eat flesh, smoke tobacco, and drink alcohol.

According to the Nutrition Investigations of the United States Department of Agriculture, the Japanese eat 50 per cent. of rice, 17 of barley and wheat, 13·9 of millet, etc.; the rest is green vegetables. 1000 to 1200 grains of cooked rice are eaten daily.

In a letter in the *Morning Post* of 15th August, Mr. T. Gordon Smith highly praises the Japanese treatment of the wounded, and the skill of the surgeons. An American surgeon pays the same tribute, and adds: "To my mind, the ration issued to the Japanese soldier has much to do with his immunity from suppurative conditions following serious injury." The diet is stated to be fish, rice, and vegetables. About 36 oz. of rice per day is the soldier's allowance. "It is undoubtedly the diet of the Japanese soldier that is the great secret of the success achieved by the army surgeons. The soldiers are in superb physical condition, and they can far better stand the shock of a bullet wound or operation than a man who is fed on unsuitable diet.[83]

In the *Encyclopædia Britannica* it is stated that the Japanese soldier is well set up, hardy, and muscular, with great powers of endurance, and a celerity in manœuvring which astonishes Occidental observers.

In an ancient document of Japan, the Samurai, the fighting men, were enjoined to have for their staple diet unhulled rice.

The liability to beri-beri only follows the use of rice or another vegetable in a bad condition. If the soldier "had recourse to meat diet, he would probably lose something of his capacity for prolonged rapid movement."

The Japanese, says Mr. Peery, are the "most vegetarian race on earth." The common food of the people is plain rice, boiled, and used without additions; sweet potatoes, occasional fish, tea without milk. Very little milk, butter, or other animal product used by Western nations is consumed.[84]

Speaking of the Japanese children, Mr. Hales says: "How happy they seem!" . . . "The coolies (their fathers and mothers) do the work of the land on a handful of rice. Yet they seem happy, with a sprightly happiness that one never meets with amongst our own very poor."[85]

A coal-carrier in Nagasaki Harbour, in an interview with Mr. Hancock, gave the following as his ordinary fare:—Midday meal, an apple, a tomato, an onion. Breakfast, a bowl of rice, with a few little strips of dried fish. Supper, broiled fresh fish, lettuce, tomatoes, onions, cucumbers, or radishes.

Another worker at the harbour had at the midday meal about three heaped tablespoonfuls of cooked rice; another, two raw tomatoes and a thin rice cake. A child had two rice cakes and an apple. These light meals are sufficient for the hard work of five hours' coal-heaving.

In the opinion of the Samurai of old Japan, writes Mr. Hancock, the first step to the upbuilding of the body lay in the direction of choosing a sound, sensible diet. This did not mean a diet in which meats and

condiments figured largely. . . . Meat has but little vogue among the natives of Japan to-day.

In 1899 the Emperor appointed a Commission to investigate what steps, if any, should be taken to improve the Japanese physique. One of the questions was whether a partial meat diet would be an advantage. "So far as meat went, the Commission reported that the Japanese had always managed to do without it, and that their powers of endurance and their athletic prowess exceeded that of any of the Caucasian races. Japan's diet stands on a foundation of rice." It is boiled or steamed. As prepared by the Japanese housewife, it is a soft, steaming, palatable food which requires no condiments. When it is boiled it is never stirred, nor, of course, when it is steamed. In some form rice appears at every meal. "When making their phenomenal marches, Japanese troops carry no food except a small bag of rice. When practicable, barley and beans are issued in small quantities." . . . Vegetables and fruit form a most important part in the diet of the Japanese. Rice comes first of all, vegetables second, fish a good third, and fruit fourth. They are fond of lettuce, especially at night, as they are considered to be an excellent sedative. Nervous disorders are seldom met with in Japan. Tomatoes and carrots are held in high esteem. Cucumbers are boiled. Fruit, when eaten, is taken between meals.

At a well-to-do family's house, the principal meal consisted of a bowl of fragrant tea, fish chowder, rice with more fish, lettuce, tomatoes, onions, boiled cucumbers, and celery, chopped raw carrot, preserved fruit, cakes of rice flour, and more tea.

The Japanese tea is weak, of a delicate colour, and

without milk or sugar. The casein in milk, and the tannic acid in tea, with a slight mingling of other components, make together a composition like leather. It is well to avoid this.

Milk is seldom found in the Japanese diet. They do not keep cows. Tinned butter is sometimes eaten. More fish is used in winter. Hard-boiled eggs are much eaten in winter.

The Japanese believe that at all seasons we eat too much, give the stomach too much work to do, and therefore cannot develop the utmost strength. Neither meat nor potatoes are used in winter. The Japanese do not heat their houses.

"Rice with fish, a hard-boiled egg or two, browned rice cakes, tea, dried fruits, somewhat varied in three meals a day," this is the diet of the Japanese, the kind of food that kept the Samurai in the best of health, in phenomenal strength, and with muscles that defied strains that would be appalling to the average Caucasian. If any hearty eater among the white races believes such a diet would prove weakening, let him try it for a few weeks, and he will discover that his strength is on the increase. Such stomach troubles as indigestion will have disappeared.

Since all strength must primarily come from the stomach, the Japanese teacher of *jiu-jitsu* (wrestling, etc.) soon loses all patience with a pupil who is not willing to follow the diet that will give the most force and best tone to his system. This the Japanese diet unquestionably does.

The Samurai and *jiu-jitsu* trainers drink large quantities of cool, not very cold, water. (Probably between, and not at, meals.)

The Japanese, when he finds a slight illness coming on, drinks much water and reduces food. The author of this book on Japan, when threatened with tonsilitis, almost entirely abstained from food, and drank nearly a gallon and a half of water, so preventing the development of the illness.

The Japanese are remarkably free from rheumatism, it is practically unknown among the two younger generations. They use water very freely both inside and outside their bodies. They bathe twice daily. Both hot and cold water baths are perpetually in use.

Both men and women are remarkably well formed, anatomically, according to medical evidence. They are very hardy, fond of any amount of fresh air and draughts, and have no dread of "night air."

Insomnia is rarely known. There are cases of nervous disease. The Japanese are fond of loose clothing, allowing plenty of fresh air to circulate round their bodies.[86]

SIAM.—The staple foods of the Siamese are of vegetable origin; peas, beans, sugar-cane, seeds and stalks of the lotus, various weeds and flowers, cocoa-nut milk, every kind of fruit, chillies, mango-chutney, and pepper-water, are articles of the common fare. But the people "depend on rice for their very existence," "all other foods are, comparatively speaking, luxuries." Rice is washed four or five times, then soaked, then put into boiling water for three or four minutes; the water is then poured off. The rice, after some time of steaming, is turned out, the grains being then all separate, and considerably swollen.

The Siamese are not energetic; they are merry, witty, gentle, and unselfish.[87]

The Siamese are described by Bishop Pellegoix as well formed, on the whole sober, gentle, careless, idle, inconstant, fond of sports, witty, and musical.[88]

Elsewhere, the Siamese are said to live very largely on rice, not the white grain known in England, but nearly the whole of the grain without the husk, with the colouring matter adhering to it, containing valuable nitrogenous and mineral matter. This valuable outer portion is removed, and the white rice exported and also now largely used in Siam by the natives instead of their more nutritious whole rice. The nutritious outer part is thrown to the dogs after the treatment in the newly introduced European mills. The Siamese also eat fish, chillies, fowls, condiments, rotten eggs, maize, bananas, cocoa-nuts, sugar-cane, limes, oranges, mangoes, and many other fruits. In the main, they are almost vegetarian. They are described as rather short, sturdy, with considerable muscular development and mental abilities.[89]

Central Asia, Siberia, etc.—The *Kirghiz-Kazaks* live on millet, koumiss, mutton, and horseflesh. They are short, strong, and hardy, and go several days without food.[90]

The *Tungus* live very largely on animal food, foxes, reindeer, ermine, squirrels, etc. They are said to be a fine people, brave, hardy, intelligent, strong, cheerful, and candid. They number about 80,000, and are of the Manchu stock.[90]

The *Samoyedes* are described as sociable, honest, peaceful, and generous; primitive and superstitious. They are large flesh-eaters. They thrust flesh between the teeth of their gods at certain intervals. They are devoid of European principles of morality.[90]

The *Yakuts* are also very large consumers of flesh; it is said that four men can eat a horse. They bear intense cold without discomfort. They are described by one observer as good-tempered, orderly, industrious, and hospitable.[91]

Professor W. Lawrence, F.R.S., referred to some of these tribes in his lectures at the Royal College of Surgeons, saying that the idea that animal food renders men strong and courageous is fully disproved by the inhabitants of Northern Europe and Asia, the Laplanders, Samoyedes, Ostiacs, Tungooses, Burats, and Kamschatdales, and by the Tierra del Fuegians, who, living almost entirely on flesh, are the smallest, weakest, and least brave people of the globe.

The *Tartars*, Mongols, live entirely upon flesh and milk. They are nomadic. The men hunt and hawk. They eat any kind of animals, and the milk they use is the fermented mare's milk, known as "koumiss." This account is derived from Marco Polo, who visited them in the thirteenth century, and is true of the people to-day. The Mongolians are robust, and can endure great hardships. They always prefer riding, however, to walking. They can endure great cold well. They have much degenerated under Chinese government, and are addicted to cattle-stealing and excessive drinking. They were long notorious for extreme and barbarous atrocities in their conquests. They have been recently described as sluggish, enduring, thrifty, of low morality, with little reasoning capacity or artistic sense.[92]

The people of the Chin Hills are a fine race, strong, and able to carry heavy loads. Flesh-eating and excessive drinking are mostly habitual.[92]

The *Anamites* are dirty, thievish, deceitful, and

revengeful, according to one traveller, but Lord Curzon describes them as having many good qualities; they are, he says, hospitable, lively, good-tempered. They make excellent soldiers, and are somewhat artistic. Their favourite food is rotten fish and dogs; they eat various kinds of flesh, and rice, vegetables, and eggs.[93]

The *Sakais*, or men of the woods, the aborigines of the Malay Peninsula, live on fruits and vegetables as a rule, but will eat any animal food they can get, such as snakes and lizards, when their stock of vegetables is exhausted.

Roasted tapioca and sugar-cane are a common diet for breakfast. The men who are out during the day return in the evening, go to sleep about nine, wake at midnight, and eat their second meal, and then sleep again till dawn.

The *Semangs*, another aboriginal tribe, live by hunting, and subsist on animal food. They are sturdily built, but dwarfish in stature.[94]

As a race, says a well-known traveller, the *Yakutes* are distinctly plain in appearance, and often repulsive. The type is Mongolian. The men are very clever at trading; of medium height; the women ungainly little creatures. The Yakute peasant is too stupid to be treacherous—a miserable mortal. With the chief of police at Yakutsk the breakfast was black bread, smoked fish, and cheese. The midday meal was heavier, with wines, beer, and vodka. At 3 p.m. there was a dinner of several courses; at 8 p.m., tea with sweets and cake; at midnight, salt fish, ham, caviar, and raw cucumber. Among the well-to-do class physical strength is soon impaired by the idle life, moral laxity, stimulants, and cigarettes.[95]

The preparations for a feast among the *Orochons* are described by Mr. Hawes. A woman was scraping salmon skins, while another was pounding in a trough rice, fish, whortle berries, and seal oil. Dried fish is bread and meat to these tribes during the long winter.

The *Gilyats* live mainly on fish and the flesh of snared beasts. They obtain tobacco, brick-tea, etc., by barter. The death-rate among young children is very high. Much was heard of the degeneration of the Gilyats lately in physique and numbers. "The decline of the race must be attributed to contact with the white man." "Lung and throat diseases and scurvy accounted for most of the deaths among the older people." "Coughs, colds, and pulmonary complaints are very prevalent."[96]

Tibet.—Mr. F. Grenard describes the food and physical character of the Tibetans as follows:[97]—The staple or basis is not "tsamba" or barleycorns, but innumerable cups of tea beaten up with butter, and salted, and taken with dry morcellated cheese. They add a very respectable quantity of flesh, usually yak's. Wheatmeal and rice and vegetables are eaten. The people are large eaters, and large drinkers of beer and brandy. The overcrowding and dirt are horrible. Illness is extremely prevalent, including cancerous ulcers. Infectious diseases of every kind abound. The men are above medium height, with hard muscles, and are active and enduring, but not equal to Europeans; they are morally weak, obsequious, gay, and licentious.

Mr. Kawaguchi, who lived some time among the Tibetans, observed that the city people were great flesh-eaters, consuming yak, mutton, goat flesh, and

beef. Rich and poor, however, subsisted chiefly on warm baked wheat flour and tea, rubbed in with butter and salt. They were fond of home-brewed beer.[98]

India.—Rice is, and has been for ages, the common food of an immense area of the continent. The oldest civilisation was in Asia, and the inhabitants of great tracts of the East have remained the same race for thousands of years. The *Institutes of Manu*, one of the oldest writings in the world, mention rice as the principal food of India.

The people of Bengal and the low country now live mainly on whole rice and ghee (boiled butter), and on dahl, a kind of lentil, with ghee.[99] Millet at least equals rice as a staple food in India. Dahl is not so much used by the poorest class. Many millions have only two meals a day, each of which is deficient in quantity, and consequently their condition remains low and their strength feeble ; £1 a year, or about a half-penny to a penny a day is the average income of the small cultivator. The salt tax and property tax bear extremely hardly on these men, from whom the greater part of the wealth of India is derived.

In the North-West Provinces, unleavened bread made of wheat is the staple, and produces a hardier population. The weakness of the rice-eating Hindoo is the consequence of extreme poverty, and of the prevalent malaria. The Chinese, with nearly the same but more abundant fare, are about the strongest and most able workmen in the world.

In the Deccan, jowar and bagra millets are the staple ; in the southern parts of the Deccan, a poor grain called "rági." Pulse, vegetables, roots, and fruit are also eaten. Salt is used as a condiment.[100]

The messengers from Madras to Bombay or Calcutta were remarkable for activity and endurance. They ran at the rate of sixty-two miles a day for ten or fourteen hundred miles.[101] They were tall and athletic. Their food was boiled rice.

Mr. Buckingham states that the people of the Himalayas, living on rice, were much stronger than the British sailors.

The Hindoos of North-West India can walk fifty or sixty miles a day with no other food than whole-meal cakes and a little butter.

The Sikhs, who lived almost entirely on vegetable food, were among the finest types of humanity.[102]

Among the higher classes of Hindoos, who live on abundance of grain and vegetable food and sweetmeats, etc., are many of great vigour and ability, according to Graham ; but it must be observed that a luxurious life leaves very obvious effects upon the rich families of India.

Sir Colin Campbell, Commander-in-Chief of the Indian Army in 1857, in instructions issued to the troops, laid down that "a large amount of animal food, instead of giving strength, heats the blood, renders the system feverish, and consequently weakens the whole body. The Rajputs of Rajputana, and the Sikhs of the Punjaub, are physically as strong as Europeans, and they are capable of enduring more fatigue, and withstanding better the vicissitudes of the climate of India. This is due partly to race, but chiefly to the nature of their food, of which the staple is wheaten flour, made into chapatis. They eat but twice a day, and although they partake of animal food, they do so in a very much less proportion than is the habit of

Europeans." "The large quantity of pork indulged in by soldiers is most injurious." "Vegetables are essential to the preservation of health."

Sir Erskine Perry wrote:[103] "The Hindus are a handsome race of mankind. The women may vie with those of any country in the world for symmetry. A Brahman girl puts on a clean robe every day, and the river is entered with everything on," so that the dress as well as the body receives ablution. The figures coming from the well reminded Sir Erskine of the finest draped figure of antiquity, the Pallas di Velletri.

Sir Mountstuart Elphinstone, describing the character of the people, said the villagers are everywhere an inoffensive, amiable people, affectionate to their families, kind to their neighbours, and towards all but the Government honest and sincere.

Accounts of the last terrible famine in India give a very interesting insight into the self-denying habits and patient, generous character of many of the Indian people.[104]

The general experience, said Dr. Cornish, of the superintendents of the relief nursery, was that mothers, aunts, grandmothers, or neighbours will bring children to be fed, and, though in want themselves, never express by word or sign a desire to share the help they know is only meant for young children. Big boys will bring little boys, and, although lank and hungry, and casting longing eyes on the food, are only intent on seeing their charges get the allotted ration.

Lord Northbrook put the amount to feed the population at 1 lb. per head for man, woman, and child; Sir Richard Temple at 1½ lb. of grain. This

was after due deliberation. The lowest for the non-labouring jail population in Bengal was 2 lb. The ordinary diet of a labouring Bengal man is 2 lb., besides about half a pound of fish or pulse or condiment. The amount for Bengalese sailors on board ship is always 2 lb. or more. Nearly all the Government relief was in rice, which for equal weights is less strengthening than wheat. The Duke of Argyll supported the larger estimate.

The medical officers maintained that $1\frac{1}{2}$ lb. of raw rice per diem is no more than is absolutely sufficient for an adult, whether old and infirm or no. A less amount might sustain life, but would not save the recipient from hunger.

Sir R. Temple sanctioned the experiment of keeping the people at relief works on 1 lb. a day plus half an anna.

Sir R. Christison, the eminent Edinburgh doctor, was of opinion that an adult requires not less than 35 oz. of dry food a day; three carboniferous to one nitrogenous part.

In 1863 a searching inquiry was instituted by the British Association as to the amount of food necessary to a man in full work in India. The observers agreed that the minimum grain allowance is not less than 24 oz. per man. The natives themselves agree in this; they estimate the amount disposed of by a native of full appetite at something between 24 and 48 oz.

In Bellary and Cuddapah the amount of dry cereal for a labourer was 33 and 48 oz. respectively.

Any dietary containing less than 200 grs. of nitrogen will not permit of severe labour or task work.

The jail diets provide 200 to 300 grs., and sometimes these have to be supplemented by extra meat or vegetables to prevent the men from falling into a low condition.

One pound of grain, with the half-anna for extras, is *insufficient* to procure an adequate sustenance.

"It is the slow and gradual form of starvation by defective nutrition in the daily food that is the most difficult to deal with by after remedies. It is easier to break down the vital powers than to build up or restore." [105]

Sir R. Temple said : According to theory, a native requires 300 grs. of nitrogen in ordinary work, and 500 to 600 when marching or undergoing severe labour. But as a matter of fact he is allowed only 178 grs., and the sepoy does well in hard work on this. . . . The British soldier receives 242 grs. in full work. (These figures are not trustworthy as complete data.)

Dr. Cornish gave a very full answer to this contention, and stated that the mortality of native troops is much higher than the rate at their own homes. (There may be various reasons for this.) The allowance of soldiers, both British and native, enables them to make up their dietary by extras.

The effect of improving the standards of diet in the Madras jails has been to lower the annual death-rate from 107 to 22 in the eight years during which the new dietary has been in force.

Half-rations as a punishment produced a great deal of illness—ulcers, bowel complaints, dropsy, etc.

The scale of diet for prisoners with labour in Bombay prisons was as follows :—

24 oz. daily of own grain.
5 of meat on Wednesdays and Saturdays.
5 dhall five times weekly.
1 linseed oil.
8 vegetables.
6 dr. salt.
4 curry stuff.

The reduced dietary gave—

20 oz. grain.
4 meat.
4 dhall.
¼ linseed oil.
6 vegetables.
6 dr. salt.
4 curry stuff.

The result of the reduced dietary was disastrous.

Mr. Vaughan Nash, recently commissioner of the *Manchester Guardian* in India during the famine, wrote :[106] "It seemed to me to be the spirit of a noble people, who had won refinement and discipline when our forefathers were savages—a people we may well be glad to succour and proud to rule, looking out at the wreck of all things. . . . The Indian people are not paupers in spirit. . . . I cannot imagine that any people could work harder to preserve their independence, by sticking to their villages and undergoing any amount of privation, than the Indian people."

Dr. John Pollen, LL.D., J.P. : "The love and devotion of the Indian mother are simply admirable."

Bishop Heber says : "The Hindoos are brave, courteous, intelligent, most eager for knowledge and

improvement, sober, industrious, dutiful to parents, affectionate to their children, uniformly gentle and patient, and more easily affected by attention to their wants and feelings than any people I ever met with."

MALAYA.—Rice, fruit, and vegetables are the staple food, and fish is often added to this diet. Rice and fish, with chillies, is a common meal.[107]

JAVA.—"The staple diet is rice and dried fish, with vegetables and fruits." The rice is steamed, not boiled. The upper classes have a variety of light dishes—eggs, vegetables, fruit, rice, macaroni, fish, and flesh.[108]

TURKEY AND NEIGHBOURING COUNTRIES IN ASIA—*Armenia.*—The Official Report states that the frugality of the Armenians is proverbial. Bread, olives, cheese, onions, and salad are the staple; alcoholic drink is taken only on feast days. [The strength of the Armenian porters is enormous. Before the massacre, there were thousands of Armenian porters at Constantinople; these were remarkable for temperance and strength.] "Strong drink is a curse" to immigrants, and does immense harm to the constitutions of all who give way to it. Delirium tremens or fatal liver disease is the usual result.

Damascus.—The artisans live on bread, fruit, vegetables, oil, and rice; the labourers, both Christian and Moslem, are strictly vegetarian. Many of the labourers are idle and listless. The peasant's fare is barley or pea bread, fruit, and vegetables.

Persia.—Bread, rice, cheese, vegetables, such as melons, cucumbers, etc., are the common fare. A little tea is used. The working classes have nothing like the suffering of the working classes in England. At

Bushire, lumps of dates, bread, salt fish, and rice, and at Bassadore fish and dates, form the staple ; vegetables are only obtained in the rainy season. At Bagdad, bread, fruits, dates, and, in the summer, water-melons. At Tabreez, bread, fruit, cheese. The poorer classes do not use wine or intoxicants. The author of *Living Races of Mankind* gives "rice in various forms, fruit, sweetmeats, and sherbet" as among the principal victuals of the Persians. The dates on which the Arabs live are like good-sized plums. And Mr. Smith says that the Persians who live chiefly on rice, etc., and a little flesh occasionally, are strong and of a good constitution.

Tripoli.—Fruit, roasted barley meal, bread and oil. Green fruits in summer, dried dates, and buttermilk in winter. Meat and eggs, and even bread and oil, are rather luxuries, which they do not very often enjoy.

Anatolia (*Northern and Central*).—Trebizond, Sivas, Angorah, Kastamouni : maize bread is the staple food on the coast. Corn, barley, millet, rice, and lentils are grown, also many vegetables. Fish is eaten on the coast.

In Central Anatolia the workman's food consists of brown or maize bread, scraps of meat, or meal and grease, with a few sprats, onions, and unripe fruit. The porters, who are very numerous, do heavy work, and their hours are long.

The peasant's food is mostly vegetable ; maize, rye, and barley bread form nine-tenths of his diet ; milk, curds, cheese, and eggs are occasionally added ; dried meat and fish are rare luxuries. Water is the only drink.

Kurdistan.—Bruised wheat boiled into a pilaf with butter, milk, sour milk, and bread. Occasionally eggs, rarely flesh. Two meals a day. Two pounds of bread a day, very bad in quality. Nearly all families have a cow or sheep, which lives under the same roof.

In the country the poor peasantry "never touch meat but when one of their animals dies from accident, old age, or sickness." The comparatively well-to-do people use jerked or salted meat during winter. Milk foods are in very general use, and boorghul pilaf made with butter.

Scutari.—Maize bread, occasional flesh, vegetables, melons, grapes, figs, chestnuts, walnuts.

Smyrna.—Coarse bread, wheat, barley, maize, beans, onions, vegetables, olives, milk, eggs, sometimes rice, fruit, and coffee. Flesh very rarely.

Egypt—Alexandria.—"Entire abstinence from spirits" is recommended to foreigners. The artisans have much the same diet as the English, but with less animal food. In the country the peasants live generally upon vegetables, oil, and fruit, with coarse cheese and very bad bread.

Syria—Mount Lebanon.—In a speech at Exeter Hall on May 16, 1838, Assaad Yakoub Khan, a native Syrian, said the people of Mount Lebanon were very strong, tall, and active. They lived almost entirely on dates and water. There were many among them of a hundred to a hundred and ten years old. Mr. Smith cites Burckhardt's statement concerning the Bedouins of Syria, that their usual fare is flour mixed with camel's milk.

In a book on *The Nearer East*, recently published,[109] I find the following interesting particulars:—

"Where the rainfall is abundant, but the climate, owing to high relief or other causes, is temperate, we find a wheat-growing and wheat-eating people." "Barley is grown in every part of the region where corn may sprout at all, but chiefly for the feeding of the more valuable live stock; it forms a staple of human life only in the south of Greece, in the smaller Ægean Isles, with Crete, and, allied with millet, in Armenia, in the middle valley of the Tigris, in Persia, and in parts of Western Arabia. . . . The intermediate grain of maize . . . prevails over wheat in the south of the region, the Nile valley, and the central and south-eastern Arabian oases. . . . It is only in Lower Mesopotamia that rice is to the population what it is farther east, although all over our region it holds a far more important place than in the West.

[In the region] milk is "hardly ever taken in its natural state, but boiled, curdled, churned, or otherwise treated." Next in importance comes "the fruit of the date palm, usually cooked." The third product is olive oil, the fourth wine, and the last fish. "Flesh of animals is throughout the region a luxury."

"Milk and dates together are responsible for human life over an immense area not included in our distribution of grains, namely, the Syrian and Arabian deserts. The milk is mainly that of home-bred camels. The dates are obtained from the oases and the fringe lands. Milk, without dates, is a staple in a large part of all the higher lands of the region, in North and East Albania, Eastern Macedonia and Rumelia, on the Anatolian plateau, in Armenia, Kurdistan, and the Persian border ranges. Dates, without milk, are added by the Mesopotamian Arabs to their rice, and,

in less degree, by the poorer Egyptian fellahin to their durra."

"The Albanian and the Greek populations have (as a whole) the same broad characteristics. They are distinguished by physical and mental alertness and agility. They appear, as do very hardily trained athletes, fine-drawn in body and mind, ready for instant action or thought, but not capable of sustaining thought or action strenuously or for long." Their food is small in quantity, but quickly assimilated. "Olive oil has no superior in the rapid capacity both to satisfy and nourish." This oil and milk and bread and light wine constitute their diet. Their failure to comprehend the European's demand for full and varied meals is often expressed and profound.

On the eastern side of the Spine, where the heating grain of maize replaces wheat, and where meat, vegetables, soups, and butter replace olive oil, the people are heavy and slow, but enduring long both with body and mind. The Bulgar-Slav race rivals the Turk in its excellence as military material. At a college at Constantinople the strongest intellect among various races is the Bulgarian. The plateau-folk of Asia Minor, eating wheat and adding only milk as a staple, have endurance and depth, slowness and stupidity. The Anatolians supply excellent infantry, steadfast and pure-living. Where the quality of the food seriously deteriorates, the people are found crass and unstable. The Armenians of the eastern plateau are a worthy peasantry, intelligent and enterprising when trained. Speaking generally, the author says that "where all nutritious food, and especially grain, is scarce and dear through bad government, lack of transport, and a

short-sighted intelligence, which, for momentary gain, replaces useful cultures over large tracts by luxurious products, it may be said truly of the population that it is physically and mentally unstable and unsound." "There is no more enterprising, no keener intellect in the Nearer East than the Syrian of the Fringe. Here the food is wheat, oil, milk, and wine." The Bedouin is the athlete over-trained, living on dates meagrely. He is restless, alert, incapable of sustained thought or action. The rice and date eating Arabs of the Mesopotamian delta are weak and degraded, but more stable than those who live without grain in the desert. [In Egypt the smaller freeholder is dying out, and nine-tenths of the fellahin are serfs of the soil.]

In *Volney's Travels* it is stated that the Bedouins are an exceedingly alert race, and that they live most frugally. Six or seven dates, soaked in melted butter, serve a man frequently for a whole day; sometimes a little coarse flour or rice is added. Lemprière, in his *Tour to Morocco*, mentions that couriers in Barbary went extraordinary distances with only bread, figs, and some water.

The diet of the Anatolian villagers is almost equally plain, and, according to the Official Report, they are "hardy, industrious, and perfectly sober men."

III. Australasia and Neighbouring Parts.

The natives of the Australian Continent are generally stated to have been of a very low type, and their means of subsistence were certainly precarious, but the testimony of the distinguished officer quoted below disagrees with the common opinion of their intelligence. Probably

the natives of the north were favourably affected by former intercourse with neighbouring islands. Their food was very various, but principally vegetable.

Captain, afterwards Sir Henry, Keppel described [110] the native Australian in the first half of last century. At Port Essington, North Australia, he wrote: "The natives are well formed; their limbs are straight and sufficiently muscular; their bodies erect; their heads well shaped; the features generally good; teeth regular, white, and sound. They are capable of undergoing considerable fatigue and privation in their wanderings, marching for days together long distances. "The women are their beasts of burden." "The aged, deformed, and sick are carried on the backs of good Samaritans." "A greater mistake [than putting the Australian natives very low in the scale] has never been made." The native of North Australia is intelligent and apt. Many of the natives speak two or three dialects, and some speak English and Malay fluently. They are great cheats, thieves, and liars. They are tolerably long lived. Infanticide is common. Children are very kindly treated, they are never beaten or punished, how naughty soever they may be. Children are often suckled till three years old. Idiots, etc., are never seen; perhaps they are killed.

The natives devour all kinds of animals and a great variety of roots and fruits, also rice, wild honey, etc. Geese, dugongs, large lizards, and insects are eaten.

At the other end, that very modern observer, Max O'Rell, describes the European Australians as having tea and bread and butter at 7 a.m.; meat, eggs, and bacon, etc., at 8.30; light lunch of tea, etc., at 11; dinner with tea at 1 or 1.30; tea at 3; meat and tea,

etc., from 6 to 7. Probably this account is slightly, but only slightly, exaggerated.

Private accounts, magazine articles, and official statistics show that very large quantities of animal flesh and of tea are consumed by the Australian colonists. Insanity is terribly frequent in the lonely interior.

Flesh, it is stated, is eaten by old and young alike at every meal by colonists. Practically, vegetarianism is non-existent.[111]

New Zealand.—The Maoris were mixed eaters; they hunted and fished, and ate the flesh of pigs, birds, and other animals; their vegetables were the sweet potato, the taro, the gourd, and various berries and roots. Cannibalism was practised in former times.

They were strong, lazy, warlike, intelligent, and, on the whole, superior to most of the Polynesians from whom they were derived. They are described as tall, powerful, and well made; nevertheless, they fell victims to consumption and to European vices, and are only now beginning to arrest the process of extinction under British restrictions and care.[112]

With civilisation, says the author of *Australasia*, the old elasticity of spirit and enjoyment of life in the Maoris seems to have left them. "Our habits are not suited to them; our diseases and vices decimate them." "As in so many other cases, we seem to civilise and Christianise, only to destroy."[113]

Savage Island is about nine miles long, peopled by a race of mixed Samoan and Melanesian blood, converted to Christianity; intelligent, wild, and interesting. They are said to be increasing at the rate of $2\frac{1}{2}$ per cent. annually. Their numbers were, in 1864, 5000. It appears that these people may be civilised without

being exterminated, if protected from the vices and diseases commonly brought by Europeans.[114]

The *Samoans* are said by Captain Erskine to carry their habits of cleanliness and decency to a higher point than the most fastidious of civilised nations, and to observe a dignity and forbearance at their meetings which Europeans never equal; even in the heat of war they have shown themselves amenable to the influences of reason and religion.

R. L. Stevenson, who wrote of the Polynesians as "God's best, at least God's sweetest works," had a great admiration and love for the people of Samoa, who made him forget for a time the "dingy, ungentlemanly business" we call civilisation. "We live here in a beautiful land, amid a beautiful and interesting people." The men, says Stevenson, are "purpose-like, well set up, tall, lean, and dignified."

The natives of *New Caledonia* are a well-made race, described by Cook as courteous and friendly; but their character has become degraded by contact with Europeans. They were cannibals. They were superior to every other race of the Pacific in their agriculture—cultivating yams, bananas, and sugar-canes.[113]

The people of the *Solomon Islands* were cannibals; their ordinary food, besides animal flesh, was bread-fruit, yams, taro, and cocoa-nut.

In *Eastern New Guinea* sweet potatoes, yams, bananas, and sugar-canes are grown. In the Dutch portion, sago and fish are the chief articles of diet. As in so many other parts of the world where vegetable food is the staple of savage people, birds, reptiles, insects, and fish, besides the flesh of the pig, are frequently eaten with relish.[115]

IV. Africa.

Algeria.—Barley bread and kooskoosou, made with barley and a little milk and sugar, are the chief foods of Algeria. Many vegetables and fruits are also eaten, such as carrots, turnips, onions, cucumbers, beans, tomatoes, cabbages, pumpkins, maize, almonds, apricots, peaches, quinces, figs, grapes, pomegranates, oranges, dates; also acorns and dates by the very poor. Millet is much used. The Touaregs and other tribes live on dates, camel's milk, dried apricots, and salted camel's flesh. The men, whose profession is ostrich-hunting, go for days with nothing to eat or drink, except a few dates and tepid water, and the horses are also fed on dates. The wonderful white camels, which go prodigious distances, are also fed almost entirely on dates. Two meals a day is the rule in Algeria.

The Beni M'zab, of Numidian descent, are cleaner and healthier than most of the tribes.

Their special form of Islamism forbids the use of tea, coffee, tobacco, snuff, or stimulants of any kind, so the usual drink among them is either sour milk or water. The Moors drink a good deal of coffee.

In the Jewish quarter of the cities it is usual to begin meals with fruit of all kinds, then follow bread, eggs, melted butter, vegetables, and kooskoosou.

Acorns are largely eaten by the poorest Algerians; they are boiled or roasted and eaten with dates, or made into bread. They are carefully peeled.

A tribe of Arabs, called Gourbis, amongst the Atlas Mountains, subsist partly on mutton.[116]

Morocco.—The Official Reports state that the artisan's diet consists of two penny loaves and a bowl of

millet. Some eat fish or meal occasionally. Kooskoosou is the favourite national dish, and is made from the finest parts of wheat, barley, or millet, with much butter or milk.

The natives use neither wine nor spirits. Spirits are pernicious to strangers.

The *Kabyles* are the most industrious inhabitants of the *Barbary States* (Africa). . . . They preserve the grain, legumes, and other fruits, which are the produce of their husbandry, in conical excavations in the ground.

The *Tuarick* consist of various tribes spread through the greater part of the Sahara. The various tribes are very different in their characters, but they are all fine men, tall, straight, and handsome. . . . They are most abstemious, their food consisting principally of coarse brown bread, dates, olives, and water. (Richardson, Barth, Overweg, etc.)

The *Moors* are a handsome race, having much more resemblance to Europeans and Western Asiatics than to Arabs or to Berbers. They are an intellectual people, but cruel and revengeful, and they exhibit few traces of the delicacy of feeling and nobility of mind which distinguished their ancestors in Spain. They are temperate in their diet, except the richer classes.[117]

The people of *Jenna*, in *Central Africa*, says Landers,[118] have abundance of bullocks, goats, sheep, and poultry ; but they prefer vegetable food to animal. Their diet consists chiefly of preparations of yam and Indian corn ; " notwithstanding which, a stronger or more athletic race of people is nowhere to be met with. It requires the united strength of three men to lift a calabash of goods to the shoulders of one. . . . Some

of the women bore on their heads loads that would tire a mule."

Dr. Copeland, alluding to the experience of an Englishman who had lived in intertropical Africa for thirty or forty years, and kept in good health, gave the following explanation. In answer to inquiries, this settler informed him that finding his health suffer soon after removal to that pestilential climate, he changed his mode of life, and adopted that of the natives, living thenceforth on rice, maize, and water; from that time onwards he had no serious illness.

The Rev. Mr. Crocker's experience was similar; he adopted the native diet of rice, cassada, sweet potatoes, etc. Mr. M'Elvoy, in Liberia, lived on rice, vegetables, and fruit, and kept the best of health, gaining 15 lb. in weight.

The *Arabs* of a large extent of North Africa live chiefly on dates and milk. Their agility, endurance, and health are extraordinary. According to Richardson, who travelled in the Sahara, in some parts not only the people, but horses, dogs, asses, camels, sheep, and fowls, live on dates. The date-palm is found in every country from the Tigris to the Atlantic.

In Upper Egypt, according to Hamilton, the food of the people was dhourra. The richer classes added beef, goose, and vegetables.

The Hadendoa drivers of Suakim, and the people of the neighbourhood, had a similar diet. They were very strong and well built.

The Abyssinians eat raw flesh frequently, the people of Dahomey flesh, vegetables, beans, yams, and cassada.

The lithe, well-built Arabs of Algiers had maize,

rice, and fruit; the Nubian Arabs, flesh and milk; the East Africans, fish, flesh, grain, vegetables, milk, butter, honey, bananas, and dates; the Kaffirs, millet and sour milk, on which diet they greatly thrive, being strong and vigorous; in some cases they display the perfect frame of a Greek athlete. The Hottentots, a very inferior tribe, eat flesh, entrails, fruits, and roots.

The Official Handbook to Natal states that the natives there are a splendid, stalwart race, and combine quaintness and simplicity with acuteness and shrewdness. Their food has been chiefly mealies.

The Africans of the interior generally live on plant products, with occasional flesh. A recent writer on South Africa describes the indigenous population as possessed of "marked vitality and strength"; they do not die out in present conditions through contact with civilisation.[119] The Zulus and Basutos are certainly robust, and capable of much development.

V. America.

The United States (North).—A great deal of flesh meat is eaten in the United States by all classes. Also corn-pies, pastry, and cakes in great variety, hot, and large quantities of water, sipped ice-cold. Also much fruit, such as bananas, especially at breakfast. The less opulent classes subsist chiefly on pork and beans or bacon and hominy; these may be said to form the national diet, with bread and other meats. In Chicago, according to Mrs. Besant, myriads of creatures are slaughtered every week, and no one who is even slightly sensitive can go within miles of the town without being conscious of a

profound sense of depression, a sense of shrinking from pollution, a sense of horror.[120]

In Europe, says Mr. Mark Twain,[121] the traveller "could get the shadow, the sham, the base counterfeit of that meal (breakfast), but that would do him no good."

"The average American's simplest and commonest form of breakfast consists of coffee and beefsteak." . . . "A mighty porter-house steak an inch and a half thick, . . . enriched with melting bits of butter, . . . archipelagoed with mushrooms, . . . tender yellowish fat gracing an outlying district of this ample county of beefsteak." . . . "Home-made coffee with cream afroth on top, some real butter, . . . smoking hot biscuits, a plate of hot buckwheat cakes, with transparent syrup."

Mark Twain then gives a bill of fare of what he calls a nourishing (American) meal, with fifty-nine items, including oysters, coffee, chicken, steak, potatoes, biscuits, various hot cakes, bacon, crabs, mussels, various fish, roast beef and turkey, various fowls, beans, hominy, green corn, apple dumplings, iced milk, ice-water, peach-pie, pumpkin-pie.

No wonder that so many are plagued with indigestion and nervousness. But Americans are now showing us the way to great improvement in diet.

Another humorist writes as follows:—The Americans drink very hot coffee and ice-cold water alternately at breakfast. Stewed prunes, pound cake, hashed boiled beef, pancakes, crullers, ice-water, coffee with prunes, a chop, a little oatmeal in doses, etc. For lunch, pie, sandwiches, hash, crullers, viands, etc. And for supper, pie, etc., and many other dishes.[122]

British Columbia.—The diet of the British is, on the whole, like that of our race elsewhere. Poultry and eggs are scarce. The winter diet is restricted chiefly to salt pork, dried fish, and game, and occasional beans and potatoes. Large quantities of fruit are eaten in some parts. All over the country "tea" is the great meal of the day; beef, mutton, pork, fish, "damper" bread, butter, cheese, fruit-pies, cake, sugar, and quarts of tea. The British Columbians are a fine strong people, but can hardly remain so long if this account be correct.

The Cree Indians live on game, fruits, and berries. They sometimes eat 6 to 10 lb. of flesh in a day. They are hardy and enduring, but suffer terribly from scrofula, etc., the result of alternate feasts and fasts; they are gradually dying out. Rheumatism is very prevalent, which they cure or relieve by a hot-air or steam bath.

The nine thousand Chinese live on rice, dried fish, tea, and cheap whisky. They are hard workers.[123]

Mr. Fountain describes the condition of the aborigines of North America. "All the red men are highly intelligent." . . . "Among the Indians are a great number of half-breeds. These are apt to be turbulent, but they are often splendid fellows, brave and full of energy." "The half-breed girls make excellent wives. They almost always marry whites." Half-breeds are vigorous, have strong sight, and do not suffer from organic disease, except through vice, such as drinking excessively.

South of parallel 48 degrees, the red men are exceedingly fine, of an average height of 6 ft.; north of 48 degrees they are 5 ft. 6 in. to 5 ft. 8 in. owing

to inferior nutrition. They are of great intelligence and enormous physical power; they have a marvellous capacity of going without food, but when they feast, they eat enormous meals. Many of the red men live to over a hundred years.

The whites are often as bloodthirsty as the reds, and practise horrible cruelties and deceptions towards them.[124]

The diet of the red men, in their various tribes, is fully given in the summary towards the end of this chapter.

The Black Population of the United States.—The principal occupation of the negroes of the Southern States is farming. The main diet of these field hands, nine months out of twelve, is corn bread, bacon, and molasses. In spring and summer, vegetables, such as sweetpeas, string beans, corn beans, and butter beans, cabbage, green corn, mustard, kale, white potatoes, and squash are eaten. All vegetables are cooked with the fat of the pig. Many people live on corn bread, bacon, and molasses throughout the year, having no gardens. Rice, cow-peas, and fat are eaten in considerable quantities in autumn, and form a favourite dish. The working day is twelve to fourteen hours. "Chills and fevers are very prevalent. It is becoming more evident each year that the enormous death-rate among the coloured people in the Southern States is traceable directly to the rough food they eat, and especially the quantity of fat meat and grease. "A great deal of meat is eaten in the south."[125]

"The slaves," wrote Dr. Channing, "have food in sufficient quantities, and with unfailing regularity, so that the first necessity of life is supplied. They are

accustomed to sell a part of their allowance, as well as to supply the market with fruits, poultry, etc., and thus they get the luxuries which they most value, such as tobacco, salt meat, and especially dress. Their appearance shows that they do not suffer from want of food. You never see among the women that haggish, shrunk, toil-worn countenance so common in Switzerland and Germany.

They suffer much; but the origin of this is to be sought chiefly in moral evils. Their whole condition tends to degrade them intellectually and morally." . . .[126]

Mexico. — Despite their differences of race and physique, the people of Mexico seem almost unanimous in their opinion regarding the desirability of tortillas (flat cakes of roughly ground maize, salt, and water), with milk and coffee for breakfast; beans, stewed with butter or oil for dinner, followed by oranges, lemons, etc.; and maize porridge for supper. Edible acorns, beech-nuts, chestnuts, etc., and oranges, loquats, pine-apples, melons, and other fruits are very common and cheap in many parts."

The Zapotecan Indians are vegetarians, with the exception of their feasts at weddings, etc.; they do not drink toke, and there is no drunkenness among them. The men work hard in the fields, the women do the marketing and are very independent. The people are active, fond of music, dancing, and bright colours.[127]

The Indians of the State of Tobasco in Mexico, live chiefly on Indian corn or maize, either in the form of thin cakes or made into a thick drink after being ground and soured. A little sugar is added. "On this food alone they are enabled to 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." Mr. Pope gives very remarkable instances of their vigour and endurance.

The men would pole a canoe sixteen hours out of the twenty-four up the Tobasco River against a current of three or four miles an hour, a very laborious task. "Those who abstain from the use of ardent spirits are muscular and strong; and among them are to be found models for the sculptor."

Mexican Indians have recently been described as carrying loads of 100 to 150 lb. over the worst of roads on their backs. The endurance they display is wonderful. They eat no flesh; their food is boiled maize with sugar, and tortillas (maize) or omelet-pies.[128]

Humboldt gave the following interesting account of the Indians: "Accustomed to uniform nourishment of an almost entirely vegetable nature, that of their maize and cereal gramina, the Indians (Mexico) would undoubtedly attain very great longevity if their constitutions were not weakened by drunkenness.

"The Indian tanatores, who may be considered as the beasts of burden of the mines of Mexico, remain loaded with a weight of from 250 to 380 pounds for a space of six hours. During this time they ascend and descend several thousands of steps in shafts of an inclination of 45 degrees." They are exposed in some of the levels to a temperature of 71 to 77 degrees. "We cannot sufficiently admire the muscular strength of the Indian and Mestizo tanatores of Guanaxato, especially when we ourselves are oppressed with fatigue in ascending from the bottom of the mine of Valenciena without carrying the smallest weight.

"The appearance of these robust and laborious men would have wrought a change in the opinions of the Raynals," etc. "The labour which rapidly ruins the most robust constitutions is that of barenadores, who blow up the rock with powder." These men rarely pass the age of thirty-five, if from a thirst for gain they continue their severe labour for the whole week.

"From 5000 to 6000 persons are employed in the amalgamation of the minerals, or the preparatory labour. A great number of these individuals pass their lives in walking barefoot over heaps of brayed metal, moistened and mixed with muriate of soda, sulphate of iron, and oxide of mercury. It is a remarkable phenomenon to see these men enjoy the most perfect health." [129]

PERU.—The ordinary food of the Peruvians was wholly vegetable; they were described by a gentleman who dwelt twenty years among them as the hardiest race in the world. In many respects the women were quite equal to the men in muscular power and agility. In 1823 General Valdez led his troops a distance of 750 miles in eleven days, that is, more than 68 miles a day, and at the end met and routed the opposing army. During the march, the soldiers lived on the parched corn which they had in their pockets.

Parched corn is the principal and generally exclusive diet of the Peruvians when engaged in any particular enterprise or effort which requires great activity and power of body; at other times they subsist on other products of their climate.[22]

COLOMBIA—CENTRAL AMERICA.—The upper classes of Bogota, the capital of Colombia, live on a variety of meats, grains, and fruits, as in other countries; but

rice is a standing dish, steamed for hours till tender, then baked in a moderately warm oven till each grain is dry and crisp. It is then served with meat, fish, sauce, butter, or milk. For many people the breakfast is baked bananas and coffee, rice, fish, and fruit for dinner, and curded milk for supper. On this fare they thrive, and the women are described as beautiful. Turtle soup, perch, potatoes fried and boiled, salt beef, cassava root, gourds, rice, mangoes, cocoa-nuts, tropical fruits, cakes, and coffee were the articles of a bill of fare for dinner. A favourite cake is made of maize and rice flour mixed with butter and milk, and baked in layers, with guava jelly between each layer. Sour milk, mixed with raw burnt sugar, is served with cheese and maize or brown bread. This, as well as steamed rice and guava cake, may be termed a national dish.

The usual breakfast amongst the artisan class in Bogota consists of roasted sweet potatoes, with or without coffee. A favourite hot drink is made by boiling raw sugar in water and adding a little spice. A very strong spirit is made from the sugar-cane, "more maddening in its effects than the opal-tinted absinthe, which is gradually dragging Paris to its doom." "Most of the people are as clever as they are hospitable, gay, and light-hearted."

"The Opon Indians have a very fine physique; they live largely on maize, sugar-cane, and game, and on bananas, bread-fruit, oranges, and mangoes." "The offspring of the Indians and negroes, called Zambos, are a most intelligent race." "Taken as a whole, the inhabitants of New Granada, white and coloured, are a happy, healthy nation.[130]

VENEZUELA.—The Venezuelans eat large quantities of flesh ; it is the land of beef, and as much flesh is consumed there as in Germany. Mr. Fuhrman, a resident, during his stay there lived largely on fruit, which the natives are superstitiously afraid of. The chief fruits are oranges, lemons, pine-apples, bananas, mangoes, "butter-fruit," pomegranates, limones, nisperos, cherimoyas, lechosas, tumas, and cocoa-nuts.[131]

ARGENTINA.—On the average, it is reported, Argentines eat three times as much flesh as Englishmen. The Gauchos, descendants of the original Spaniards, often eat 3 or 4 lb. at one meal ; many children of five or six years live almost entirely on flesh. The Gaucho population is decreasing. Most of the hard work is done by Italians, who maintain their non-flesh diet.[132]

Buenos Ayres is, according to a recent traveller, "the most corrupt city on the face of the earth."

BRAZIL.—"The Indians carefully abstain from drinking when eating, and the same custom prevails among many other savage tribes."

The following notes on *Central and South America* appear in the Official Reports :—

Para.—"Over-indulgence, especially in drink, quickly produces bilious disorders, and often blood fevers, resulting in many serious illnesses and not a few sudden deaths."

Porto Allegre.—The beverages which will prove hurtful are spirits of all sorts, and ordinary wines of Portugal and France. Temperance in food, but more in drink, is the best plan.

San Paulo, Brazil.—The workman lives on a black bean, or mandioca root, and pork or beef. The lowest

classes depend almost entirely on the black bean and mandioca. Coffee mixed with sugar-cane; spirits is a common drink.

Colombia.—The Indian peasant lives entirely on coarse bread and chicha, the common drink.

Panama.—The food of the country is meat and rice; strong spirits are drunk which are extremely hurtful to new-comers. Deaths from fever are rare compared with those caused by alcoholic drinks.

Quito.—Beer and spirits very harmful; the cause of death of a great many foreigners.

Peru.—In the country the people are frugal. Rice and beans, camotes, pumpkins, onions, a little flesh, keep them in a good hearty condition. Chocolate or cocoa is the usual drink.

Foreign artisans sink extremely low through drink, in spite of excellent conditions for success.

Brazil.—Jerked beef, codfish, cassava or mandioca (the staple bread). Rum is ruinous to Europeans.

Rio Grande.—All stimulants are hurtful to strangers.

Maceio.—Jerked beef much eaten; cassava root, flour, sweet potatoes, pumpkins, beans, fruit, fish; molasses brandy (destructive).

Puerto Rico.—Salt fish, dried beef, plantains, rice, oil, water.

Islands.

Sandwich Islands.—Miss Bird describes the people of these islands as follows:—The women are incessantly enjoying themselves in riding, swimming, and making "leis." . . . "Used to the down-trodden look and harassed, care-worn faces of the over-worked women

of the same class at home and in the colonies, the laughing, careless faces of the Hawaiian women have the effect upon me of a continual marvel." . . . The Hawaiians are a handsome people. . . . A majestic wahine, with small, bare feet, a grand, swinging, deliberate gait, . . . has a tragic grandeur of appearance, which makes the diminutive, fair-skinned *haole*, tottering along hesitatingly in high-heeled shoes, look grotesque by comparison.

"A brilliant, laughing, joking crowd, their jaunty hats trimmed with fresh flowers, and their costumes white, green, black, scarlet, blue, and every colour that can be imagined. . . . I never saw such a mirthful-looking set of girls." Their emergence, however, from ages of paganism and ignorance has only just begun, and they have plenty of serious faults, aggravated by the influence of the worst specimens of whites who settled in the islands before the Christian teachers. Vice and oppression have been terribly prevalent, but they now enjoy an excellent system of government, and education has become general. The men do whatever hard work is done in cultivating the kalo patches and pounding the kalo. This forms the national diet; a Hawaiian could not exist without his calabash of noi. The kalo root is an ovate oblong, as bulky as Californian beet. The roots are baked and then beaten. This beating is hard work, but the kalo is easily grown, and it is said that forty feet square of ground will support a man for a year. Their other articles of food are chiefly cocoa-nut, bread-fruit, yam, guava, banana, papaya fruit, pig, and chicken. Formerly raw fish was largely consumed. In spite of a beneficent administration, the native Hawaiians are greatly diminishing in numbers. They

are not a remarkably strong race physically, intellectually, or morally, and life is too easily maintained with little exertion.

The Sandwich group is praised as "an earthly paradise"; the people were bright-hearted and happy, fond of galloping over the sands, and disporting themselves for hours in the ocean, according to Miss Bird and others. The Kanakas, as the natives are called, were amongst the finest and most intelligent races of the Pacific. They are decreasing, and have been long affected by European or American evil influences.[133]

The oppressive system of government under Europeans, the discontinuance of ancient sports, and changes in the habits of the people, the presentation of Christianity as a severe legal Jewish religion, deprived of its beauty and tenderness, have done much harm.[134]

Tahiti.—The diet and physical characters of the Tahitians have been well described by Mr. William Ellis.[135]

Among their foods are—the fruit of the rata, a kind of chestnut, the ti-root, the sugar-cane, bread-fruit (the staple), various tropical plants introduced by Europeans, such as pumpkins, melons, French beans, etc., sweet potatoes, plantains, bananas, Brazilian plums; swine and dogs—these were the only quadrupeds eaten. Fish was eaten by the people living near the sea.

The bread-fruit and the taro or arum and the yam were the chief articles of diet of the South Sea Islands. In the Sandwich Islands the sweet potato was one of the staples.

"After the Tahitians had been brought by foreign seamen and natives of the Sandwich Islands to distil

spirits from roots, and rum had been carried to the islands as an article of barter, intoxication became almost universal; and all the demoralisation, crimes, and misery that follow in its train were added to the multiplied sorrows and wasting scourges of the people." It increased indolence, discord, and infanticide.

The Tahitians were generally above the middle stature; their limbs less muscular than the Sandwich Islanders. They were more robust than the Marquesans, who are light and agile. In size and physical power they were inferior to the New Zealanders, and resembled the Friendly Islanders. The limbs were well formed, and many of them were "models of perfection in the human figure." Their countenances were open and prepossessing; their teeth always entire, excepting in extreme old age, and remarkably white. The women were stronger and bigger than English women. The men sometimes displayed impassioned eloquence in their assemblies, and used pure, copious, and precise language.

Deformity and loathsome disease are now seen frequently, introduced by foreigners. Elephantiasis had, however, long existed. Many of the South Sea Islanders became not only utterly depraved in moral character, but, as a consequence, incapable of long exertion and endurance. They were beaten in rowing by an English crew. They endure fatigue and hunger better than Europeans. They eat largely as a rule, but on a long journey very little. Their length of life was nearly the same as with Europeans. "The mode of living, especially among the farmers, their simple diet, and the absence of all stimulants," their early hours and

freedom from worries and from sedentary habits, appeared favourable to their longevity.

Bougainville says of the Otaheitans that their diet was nine-tenths vegetable, and the children's entirely. They were "free from our diseases" before European immigration.

Professor Lawrence, F.R.S., in his lectures asserted that "the negroes, whose great bodily powers are well known, feed chiefly on vegetable substances, and the same is the case with the South Sea Islanders, whose agility and strength were so great that the stoutest and most expert English sailors had no chance with them in wrestling or boxing." [136]

Funafuti.—Cocoa-nut is the common food of the people of Funafuti. Cocoa-nuts, roots, and leaves; lolo, or cocoa-nut cream, bread-fruit, taro and arum roots, and fish and crabs make up their dietary. Fish is a very frequent article of fare, and is eaten raw. The beverage is the liquid from the young, green cocoa-nut. Sometimes sea-birds and pigs are eaten. The pig-feasts are always followed by bilious attacks and illness.[137]

Philippine Islands. — According to Raynal, the negroes of the Philippine Islands were a "strong and nervous" (active?) people, and lived on roots and fruits.[3]

Ste. Croix.—The Official Report states that the diet of the labouring classes is maize, meal, and vegetables, with salt fish. They are capable of great physical exertion, which, however, is intermittent, as they only come to work when they want money. The greater number of negro coal labourers are women. They sometimes carry three hundred baskets a day, each weighing about 90 lb.; these are carried on the

head. To strangers, "excess in stimulants of every kind is injurious."

Reunion.—Rice, salt fish, vegetables; occasional poultry or pork. Two meals only. Rum is rank poison to Europeans; they cannot drink it and live.

Navigator Islands.—The water in the cocoa-nut is much drunk, also water obtained by gashing a certain climbing plant. Spirits are injurious.

The Azores.—Maize, fried fish, yams, cucumbers, melons, vegetable soup; pig's flesh at Christmas. This is the fare of the peasantry, and that of the artisans is similar.

Madeira. — Maize, pulse, vegetables, rice, lard flavouring, bread, fish, occasional flesh, occasional wine.

St. Vincent.—The fare of the negroes is maize, beans, mandioca, fish.

Canary Isles.—Potatoes, sweet potatoes, salt fish, fruits, roasted wheat, barley, or maize made into gofic, a very ancient dish.

Another observer writes: "The natives maintain splendid health on a dietary consisting almost wholly of grain which has been exposed to a temperature sufficient to brown and slightly parch it. . . . Cereals are always improved by a second cooking, and, in fact, cooking cannot de overdone with cereals." [138]

The Canary Islanders were certainly remarkable for strength. One labourer is mentioned who lifted and bore to a ship a mass of barilla which four American labourers attempted in vain to lift. This man's diet was coarse vegetables and fruit.

St. Jago de Cuba.—Beef, cod, vegetables, fruits, spirits. The liquors for sale are inferior and strong,

firing the brain to a frightful extent, intoxicating to madness, and engendering bad forms of dysentery.

The following notes on the islands of the Southern and Pacific Oceans are derived from the *Geographical Handbook on Australasia*, ed. Dr. Alfred R. Wallace :—

Pitcairn Island was colonised by a few mutineers of the *Bounty* in 1790, together with Tahitian men and women. After a period of disorder, the community settled down to habits of industry, and in 1825 Captain Beechy found them living in uninterrupted harmony, in a village surrounding an open square of grass, and shaded by plantains and fig-trees. Crime and dissension in this family of sixty-six persons were unknown ; he describes it as a kind of " Garden of Eden." Their food was mostly vegetable and partly animal—pigs and fowls. In 1873 Commander Mainwaring found the colony, then numbering seventy-six, doing well, and remarked that endemic and epidemic diseases were unknown there. In 1878 Admiral de Horsey visited them, and described them as all in good health and quite happy ; still, as in 1825, " virtuous, religious, cheerful, hospitable, patterns of conjugal and parental affection."

Philippine Islands.—The main subsistence of the Filipinos was rice, but they also grew maize, yams, sweet potatoes, etc. Mr. Crawford's researches led him to conclude that formerly their food consisted of sweet potatoes, bananas, and wild fruits. Some of the wild tribes in the southern peninsula of Luzon still grow maize, yams, sweet potatoes, but live chiefly on wild pigs, deer, and other game.

Polynesia.—The people of the Friendly Islands

made, according to Lord George Campbell, "a splendid picture of the *genus homo*, and, as far as physique and appearance goes, they certainly gave one the impression of being a superior race to ours." [139] Captain Erskine's report is similar: "A remarkably fine-looking set of people, . . . several above 6 feet high and of herculean proportions." The arm of one measured, above the elbow, $15\frac{1}{2}$ inches round, while that of probably the stoutest man in the ship was but 14 inches. Their "manly beauty was very remarkable." The people were joyous and fond of amusement, clean, and clever in native manufactures. They were, when first visited by Europeans, remarkably healthy, brave, candid, cheerful.

Sumatra.—The Sumatrans of the interior, according to Mr. Marsden, are temperate and sober, with a diet of vegetables and water, except at festivals or on visits from strangers, when they supply animal flesh.

Borneo.—The Dyaks of Borneo cultivate rice, vegetables, and fruit trees, which furnish an important part of their food.

New Guinea.—The Papuans eat pigs, dogs, fowls, kangaroos, lizards, fish, molluscs, insects, sweet potatoes, bananas, sugar-cane, bread-fruit, cocoa-nut, mango, etc.

In the *New Hebrides*, in *Aristeum*, the savages are "becoming educated, and form a most interesting community." But "epidemic diseases introduced by Europeans, and the too sudden change from the habits of barbarism to those of civilisation, everywhere destroy our most promising converts." The number of people has fallen from 12,000 to 2000. They were cannibals, but soon adopted the quiet habits of civilisation. Their staple was probably like that of the people of *New*

Britain—bread-fruit, yams, taro, cocoa-nut, fish, and flesh.

In *New Caledonia*, the fare was mainly yams, bananas, sugar-cane, etc. They were skilful agriculturists, but thorough savages and cannibals. They were well-built, and brave as warriors.

Australia.—The food of the natives is "very varied," and "of animal food they eat almost every living thing," including lizards, snakes, frogs, white ants, and moths. Human flesh was eaten "not only from necessity, but from choice." Eggs and flesh are often allowed to putrefy before use. Wild yams are very abundant and large, the roots of the bulrush are roasted and made into cakes, many other roots are eaten, also young leaves and bark, the seeds of leguminosæ, herbs, fungi, manna from a eucalyptus, and honey. Water is obtained from shallow wells in the dry sand, and from the dew on long grass.

The Australian natives are so hardy that though a limb may be so torn and riddled with wounds as to become a shapeless mass of torn flesh, it quickly heals with "no remedy but a little fine dust."

No food crop was cultivated, no domestic animal reared, for food or companionship, except the dog.

New Zealand.—Sweet potatoes, taros, gourds, roots, berries, fish, moas, and other animal food, including human flesh, made up the victuals of the savage Maoris. They were strong and active, hunters, fishers, artificers, and orators. With civilisation "the spirit and enjoyment of life seems to have left them." "Diseases and vices decimate them." "We seem to civilise and Christianise only to destroy." (1880.)

The Malays in the *Malay Archipelago* are "very

frugal," "the eating-houses take the place of our drinking-houses," and here "they indulge in dry rice, capsicums, little scraps of meat or fish, cooked vegetables, and sweet tit-bits," with a cup of hot water. They are distinguished by "greater energy and acquisitiveness from the other races of the archipelago." The moral character given them is low. Nominally Moslems.

Savage Island.—The increase in the population here "becomes most valuable evidence that Polynesians may be civilised without being exterminated, if only they are protected from the rude competition, the vices, and the diseases which free intercourse with the ordinary class of Europeans invariably brings upon them."

In *Tahiti* the people are "decreasing with alarming rapidity." "To harsh treatment, intemperance, and epidemics thousands fell victims." Dances were forbidden by the missionaries, and intoxication took their place, with most disastrous results. The orange, now fermented, has been to them as the forbidden fruit of the garden of Eden.

The following notes result from the reduction to the smallest possible compass of information contained in Featherman's *Social History of the Races of Mankind*, referring to the diet and physical qualities of a large number of races and tribes. These are arranged not so much according to geographical position or country, as according to race or origin. The single word "medium" is used to denote medium stature. The original descriptions, having been based upon no common plan, are wanting in comparability, but abound with interesting matter.

Where moral qualities are mentioned it is well to

remember that different travellers and observers give very different accounts in many cases of the people subject to their comment; also that the condition both of physical and moral health depends on many factors. Food is often a lesser element than some long-persistent habit or racial quality. I have therefore omitted all but a few of the opinions held by European visitors of the moral characteristics of a race, and these few seemed to have good evidence of verisimilitude. There is sufficient material, I think, when disturbing elements have been eliminated so far as may be, for a fair estimate of the influence on strength of several kinds of staple diet, and of the habits connected with their supply. In very many cases where flesh is mentioned, it is only a rare or occasional extra.

The nature of the food eaten by the various tribes and races, and the physical development of these, are concisely noted in parallel columns:—

ARAMEANS.

Peoples.	Foods.	Physical Character.
The Bedjahs .	Flesh, milk, etc., chiefly.	Temperate, generous, medium, robust, well formed.
The Meyrabs .	Dhourra bread, bamieh or okra (hibisc. escul.), pounded beef, with salt, pepper, spices, and herbs, with milk added. This is the common dish twice a day. Camel, beef, or mutton occasionally. Maize or millet; bonza beer.	Corrupt, drunken, avaricious (some tribes).

Peoples.	Foods.	Physical Character.
Barabras or *Kenoos* (Berber race.)	Dhourra cakes, curdled milk—chief diet. Bean leaves, dates, beans, onions, okra, maize, locusts, crocodile.	Medium, robust, active.
Abadde . . .	Dhourra, milk. Flesh occasionally; rarely of their flocks or herds, but of wild animals often.	Medium, well formed, well disposed.
Siwahs . . .	Dates, rice, cuscoosoo (wheat), lentils, chick-peas, cakes, and pastry baked in oil. Flesh occasionally, fowls, snails, mussels, fruits, vegetables; sour milk, date wine.	Slender, suspicious, gloomy, brave, warlike, sober.
Kabyles . . .	Cuscoosoo (roasted wheat, with other ingredients; "the universal dish of North Africa.") Bread, milk, butter, honey, dried figs in oil, vegetables, mutton and kid occasionally.	Medium, slender, well formed, very strong, active, enduring, vivacious, brave, independent, honest.
Tuaregs . . . (Sahara)	Excessively abstemious; wheat, barley, or millet porridge, vegetables, dates, figs, raisins, kids, mutton, antelopes, etc., butter, cheese.	Tall, robust, muscular. "Lying, theft, etc., are unknown among them" (!) Independent, confiding, brave.
Guauches . . (Canary Isles)	Gofio (ground barley), peas, beans, mallow, milk, goat flesh, fish; water.	Tall, active, indefatigable, robust, hardy, brave; very high morally. Extremely fond of music.

Arabo-Arameans.

Peoples.	Foods.	Physical Character.
Bedouins . .	"The most frugal and sober of all the nations." "They can live for months on the smallest allowance." The poorer classes rarely if ever eat meat. Wheat or dhourra, milk, butter, oil, vegetables at times. Rice mixed with lentils a common dish in some tribes, dates and milk almost the only fare in others. Flesh on rare occasions; locusts frequently. Sour milk the general drink. No drink at meals, but after. "Ayesh" is a general article of diet, flour with sour milk, afterwards boiled, but "burgool" is still more common, wheat boiled with leaven and dried.	Short, moderately strong, active, enduring, brave; *very fine* in character, but now in many parts degenerated.
Wahabees . . .	Rice, boiled mutton, dates, eggs, bread, vegetables; coffee, "in extremely small quantities."	Independent, patient, temperate, brave, vigorous.
Wahabees . . (Central Arabia. 76,000 Bedouins altogether there.)	Rice, boiled mutton, dates, eggs, bread, gourds, cucumbers. Coffee in extremely small quantities at a time. Many vegetables. The date-palm is the principal crop.	Independent, patient, austere, brave, vigorous, unflaggingly energetic; warlike. Every chief of a family is owner of a piece of land.

Peoples.	Foods.	Physical Character.
Sedentary Arabs of the Hedjaz (W. Arabia.)	At Mecca two meals a day are eaten. Mixed diet, rather rich fare. Coffee. Tobacco generally used. Much fruit.	Strong, muscular, clean.
Arabs of South Arabia	Dhourra bread, milk, oil, butter or fat, roast flesh occasionally. Rice, pulse, whipped cream. Locusts. Cawa coffee. Tobacco generally smoked.	Slender, muscular, vivacious, energetic, sober, frugal.
Omanites . . (S.E. Arabia.)	Breakfast: dates and rice, or baked wheat cakes. Supper: rice and flesh, or pilau and ghee butter. The poor are restricted to rice or wheat and fish, vegetables, and fruit. Grapes and sugar-cane are largely eaten. Sweetmeats, almonds, shark, dolphin; water. The rich drink wine often. Bedouins: dates, milk, and occasional flesh.	Medium, sparely made. The country people are a proud and high-minded race. Credulous.
Syrian Arabs . Very much mixed in race, except the Bedouins, who are pure Arabs.	Barley or dhourra, onions, lentils, burgool wheat; occasional honey, curds, milk, butter, and, exceptionally, flesh.	Medium, resembling the Arab stock. Deliberate, humane, but fanatical and intolerant. Mentally high; hospitable.
Druses . . . (Mount Lebanon.) (60,000.)	Frugal; fruits, grain, vegetables, and raw flesh.	Hardy, energetic, industrious, restless, austere, hospitable, sudden and quick in quarrel; intellectually high.

Peoples.	Foods.	Physical Character.
Anseyreeyah .	Rice, sorghum, maize, wheat, fowls; wine, spirits, tobacco.	Fine, stout, well formed; honest in dealings, but untruthful through oppression; avaricious, vengeful.
Moors . . . (Barbary, etc.) (Arab origin.)	Frugal; cuscoosoo, vegetables, beef, mutton. Principal meal at sunset. Coffee, tea, tobacco.	Medium, tall; also thick and clumsy in the lower class; debased, suspicious, superstitious, sensual; great fortitude in misfortune; after childhood, unenergetic, indolent, stupid. Women suckle for two years.
Barbary Bedouins	Barley, sour milk, honey, oil, locusts in the south, and dates. The rich eat cuscoosoo, flesh, etc.	Proud, sober, affable, independent, covetous; medium height; robust.
Egyptian Arabs	Very temperate; coarse fare; coffee, beans boiled during the past night; linseed oil, butter, lime-juice, bread, vegetables, herbs, soup, rice, flesh, fish, etc., among the richer classes. The fellahs live on dhourra or maize, onions, lentils, dates, vegetables; occasional rice, with flesh; tobacco-smoking.	Above medium, muscular, robust. Fellahs are medium, strong, robust, muscular — honest, frugal, generous; character high considering past oppression; mentally high, cheerful.
Abyssinians .	Bread, flesh, vegetables, butter, mead, beer. Raw or living flesh.	Medium, slender, strong; reckless of life; cruel to animals; barbaric.

Peoples.	Foods.	Physical Character.
Falashas . . (Abyssinian Jews.)	Baked flour, cooked flesh, beer or hydromel, some vegetables.	Simple, honest, cleanly, sober, active, brave.
Hassanyah Arabs (White Nile, etc.)	Dhourra, maize, sour milk, mutton, ostrich.	
Libyan Bedouins	Peas, beans, barley, dates, butter. Seldom any flesh.	Short, lean; faithful to their word.
Sahara Arabs .	Cuscoosoo, maize, rice, dates, mutton or beef; water.	Medium, commercial, coveteous.
	SYRO-ARAMEANS.	
Phœnicians . . (Ancient.)	Mixed.	Fearless, daring, skilful, strong, enterprising.
Babylonians . (Ancient.)		Brave, ostentatious, licentious; highly civilised in the arts.
Yezedees . . . (Near Nineveh.)	Bruised wheat, milk, curds, boiled together; mutton and onions, pease porridge, figs.	Fine, below medium, well formed, strong, enduring, intemperate, industrious, lively, brave, cruel.
Nestorians . . (Near Armenia); 100,000.	Dhourra bread, rice, beans, melons, almonds, etc.	Quick, intelligent, vindictive, brave, frugal, cunning, intemperate in drink.
Maronites . . (Lebanon.)	Beans, onions, rice, honey, oil, arrack, *boiled wheat*, with oil and onions; cheese, buttermilk, lentils.	Mendicant.

Peoples.	Foods.	Physical Character.
Egypto-Libyans (Ancient.)	Wheat bread, beef, goose, fish, game, vegetables, fruit, lentils, figs, dates, cheese, milk.	Strong and active.
Nubas . . .	[Diet not stated. Probably it resembles that of the Arabs of Egypt.]	Rather tall, strong, and muscular in the best districts; much emaciated on the poor land, and below medium generally; honest and very frugal and temperate; fierce.
UGRIO-TURANIANS.		
Tchoovash . . (S.E. Russia); very rich soil; about 680,000.	Coarse food — porridge, buckwheat, milk, cabbage, bread, fish, flesh of game, beet, sour milk, brandy.	Below medium, barbaric, dull eyes, low foreheads; high morally, not intellectually; love solitude; honest, simple, frugal.
Votiaks . . . (North-East Finnish Branch); 161,000.	Rye bread, oats, melted butter, vegetable soups, *geese, eggs*; beer, tea, and sour milk.	Like Finns, medium, low foreheads; morally high; frugal, but many are drunken; dull.
Tcheremiss . . (Right and left bank of Volga.)	Oatmeal, whey, vegetables, squirrels, hares, game, etc.	The plain men are medium or short; the mountain men tall; very frugal and abstemious in food, but hard drinkers.
Mordwins, Kazan, etc. (Eastern Russia.)	[Diet not given. Probably it resembles the ordinary Russian fare.]	Honest, shy, dull, dirty, agricultural, cattle-raising.

Peoples.	Foods.	Physical Character.
Ostyaks . . . (N.W. Siberia.)	Reindeer, milk, blood, train oil, fish, geese, ducks, berries etc.; *water*, brandy.	Short, well formed.
Voguls . . .	Flesh, fish, cedar-nuts, grass seed.	Like Ostyaks, low stature.
Samoyedes . . (Arctic Wanderers)	*Reindeer*, fish, blood, raw flesh, entrails, like beasts of prey; geese.	Very short—4 ft.—sturdy; low foreheads, sight keen; feelings extremely obtuse; indolent, miserable, declining.
	TURANIANS.	
Generally . .	Various.	The Turanian stock, with the exception of the Chinese and Japanese, has been "deficient in the loftier flights of the imagination, and its reasoning powers are incapable of grasping abstract principles and speculative ideas. Its mode of thinking is a dull, unvaried routine. Its legions overran much of the civilised world, humbling the most powerful nations, leaving death and desolation behind. *Now*, the Turanians, who were the universal tyrants, who seem to have been born to command, crawl before that mighty spirit which

Peoples.	Foods.	Physical Character.
		science has evoked, and which is destined to regenerate mankind." The Turanian stock is said to have developed in Siam, or at least in Southern China.
Osmanli . . . (Turks.)	Among the middle and poorer classes flesh is rarely eaten; bread is the principal part of the poor man's food. Beans and pease and whey are continually used; cheese, treacle, onions, garlic very frequently. The richer classes add chicken, fowl, mutton, or fish to their staple dish of rice, with pepper. Sherbet and coffee are the favourite drinks.	Were originally pure Turanians, but are now exceedingly mixed. They formerly dwelt near the Altai Mountains, afterwards occupied the strip between the desert of Khiva and the Caspian Sea. Were remarkable for strength and valour. They are now intermixed with Georgian, Circassian, Greek, Arab, and Jewish stock. The semi-Iranian or Aramean Osmanli, by Circassian, Georgian, or Greek women, "exhibits perhaps the highest perfection of manly beauty, united with a healthy and vigorous constitution, that the world has ever seen." The women also are said to be most beautiful. The unmixed Turanian Turk is rather short, compact, well built, with low forehead; stupid, dilatory. While they were still wandering hordes of

Peoples.	Foods.	Physical Character.
		shepherd warriors, they were brave in the field, truthful and generous; but when they became mighty conquerors, controlling powerful empires, . . . they became intoxicated with prosperity, arrogant, cruel, ferocious. With the Koran as all-sufficient, they remained ignorant. Exercising tyrannical supremacy over conquered races, they were attacked by "the canker of degeneracy." The Osmanli have still, however, some excellent qualities; they are generally free from crime, devoted to parents and children, temperate, frugal, religious. The pure Turk is unintellectual, illogical, matter-of-fact, fatalistic. Those of mixed blood are much more intelligent.
Esthonians, Lithuania, etc. 56°–60° N.	Kort, or barley soup. In some parts the poor live on this. Sauerkrout, pork. Brandy-drinking is encouraged by land-owners; temperance societies are not permitted. The people are frugal in general, very intemperate in drink.	Degraded by six hundred years of oppression. Below medium, wanting in strength, low in disposition, rough, indolent. Very brave, quick, and intelligent.

Peoples.	Foods.	Physical Character.
Livonians . .	Fish, bread, honey. Intemperate in drink.	Medium, robust, enduring. Not high in character.
Tchoovash . . (S.E. Russia) 680,000. Ugrio-Turanian type.	Frugal. Intemperate in drink. Porridge, buckwheat, milk, cabbage, onions, beets, fish, pork (occasionally), and game. Sour milk for drink ; also vodka, beer. Tobacco.	Simple, honest, with a strong sense of right and justice. Very friendly, hating war, loving quiet. Short, slender, slow.
Votiaks . . . (Finnish race) 161,000.	Rye bread, oat bread, with rye intermixed, barley, buckwheat, beer, soups, eggs, geese, light brandy, tea, and sour milk.	Strong, peaceful, frugal, slow, medium height.
Crim-Tatars .	Rice, boiled with meat-broth, mutton, lamb, cucumber, apples, etc. The country people eat mutton, goats, milk, eggs, butter, unripe wheat, dried or bruised ; wheat, rye, or barley bread, curdled milk ; and an intoxicating drink, also cider, etc.	The pure Tatars are short, robust, credulous, apathetic, indolent, sober. The Circassian Tatars, tall and robust.
Minnsinsk Tatars	Mutton, horse flesh, eggs, milk, cheese, koumiss, and milk brandy.	

Peoples.	Foods.	Physical Character.
Bashkirs . . (S. of Altai.)	Mutton, hares, fish, birdcherry, roots, flour cakes, koumiss, kroot, acrid cheese water. The poorer classes live on barley, oats, and cheese in winter.	Medium, strong, robust, warlike, indolent.
Yakuts . . . (N.E. Siberia.) (Min. temp., −56° to −78°.)	Upper classes eat much flesh. Horse, fat, birch bark, fish, milk, flour, are the common fare. The only bread is made of the thin underskin of the fir or larch. Milk, dried vegetables, koumiss. Much eating and drinking.	South of the Virchoyusnki Mountains, Yakuts are 5 ft. 10 in. to 6 ft., well built, strong, active. In the colder parts, short, active, unhealthy looking. Low in intellect, superstitious, gentle, indolent.
Kirghiz Kassaks	Mutton, beef, kid, camel, horse, chicken, boiled wheat and millet, koumiss. The poor have mutton and kroot cheese daily.	Medium, hardy, robust, repulsive, indolent, cowardly, deceptive, morose, melancholy.
Toorkis . . . Toorkistan, Khiva. (Extremes of temperature.)	Mutton, rice, beef, goats, horse, entrails, pillau or rice. Sour milk. Bread, vegetables, peas, beans, carrots, etc.	On the whole, temperate in habit, but voracious on occasions.
Toorkomans .	Mutton, pillau, coarse flour cakes, pumpkins, melons, buttermilk, coffee (sometimes twenty cups a day). The labourers eat only bread and oil, except on rare occasions.	Medium, vicious.

Peoples.	Foods.	Physical Character.
Tatar Toorkies (Extremes of temperature.) Yarkand is the capital of Chinese Tatary.	Rice, with mutton. Lightly leavened bread, horse, yak, pheasants, fruits, melons, etc.	Like other Toorkies, medium and robust, but unlike them in character; happy and cheerful.
	Finns and Lapps.	
Finns . . .	The staple food of the middle and poorer classes is potatoes, butter, fresh and curdled milk, salted fish, and occasionally salted flesh. Bread is used in a dry state. Much brandy is drunk by the men, and coffee by the women. They smoke a great deal of tobacco from an early age. Minimum temperature in the north, 56° F.; at Abo the mean temperature is 37·3°; at Enontekeis, 27·4°. The climate is unfavourable to agriculture. Rye, barley, and oats are the principal crops; others are potatoes, turnips, cabbages; and in the south apples, pears, plums. Agriculture is successfully pursued. On the Gulfs of Finland and Bothnia the people live principally on fish. The rearing of domestic fowls is an important industry.	The Finns are the most advanced of all the branches of this race, except the Magyars. The ancient Finns lived by hunting and fishing, and were savage; at present they are remarkable for integrity, veracity, and frugality. The Tavesters are strong and robust, with broad shoulders. The Karelians are tall, slender, and less strong.

Peoples.	Foods.	Physical Character.
Lapps . . .	The mountain Lapps live on reindeer and milk. The hunters live on bears and other game. Bread and salt are almost unknown among the wild tribes of mountain Lapps. Black bread or sawdust is used among the poor of South Lapland. Water is the common drink. Some fruit.	Much inferior to the other Ugrio-Turanians. Very few attain five feet. Broad-chested, strong-limbed, agile, swift, very strong and enduring. Defective in reasoning powers, and slow in intellect.
	Magyars.	
Hungarians .	The Roumanians, "wild Wallachians," hardly ever eat flesh; their principal food is maize mush. The settled Gipsies live on food like that of their neighbours; the nomadic tribes like to feast on the flesh of animals dead of disease or accident, especially tainted flesh, porcupines, marmots, squirrels, fowls; *water*, brandy.	The mixed Hungarians or Magyars are fine, handsome, tall, robust, but the pure Magyars are reported to be far from beautiful. [The Wallachians are described by Volney as tall, well built, robust, and very healthy-looking. "They prefer vegetables and fruits to the most delicate meats."]
	Central and South America.	
Chiapans *Guiacurus* *Cochimis* (California.)	The Guiacurus ate flesh, fish, insects, agave, pine-nuts, wild fruits, etc.	Medium, robust, excessively gluttonous, coarse, low, savage.

Peoples.	Foods.	Physical Character.
Mutsuns . . . (California.)	Venison, many beasts, insects, acorns, nuts, wild fruits.	Medium, well formed.
Chichemics . . (Central Mexico.)	Vegetable food, maize, bananas, etc. ; intoxicants.	Tall, muscular, well developed.
Zapotecos . .	Maize, vegetables, fish, flesh occasionally ; frugal, but fond of over-drinking	Medium, robust, pleasing.
Opatas . . . (North Mexico.)	Mixed food, game, fish, vegetables, maize. Boiled beans and pumpkins at every meal.	Tall, erect, well formed ; morality high.
Mayas . . .	*Maize*, fruit, fish, game.	Tall, robust, intelligent ; moral on the whole.
Aztecs . . .	*Maize*, fish, flesh, etc.	Medium or short, physically fine ; moral qualities mixed.
Mosquitos . . (Honduras.)	Mixed diet ; plantains, bananas, pine-apples, sweet potatoes, and yams are staples ; roots, various flesh of game.	Medium, well built, athletic ; various moral qualities, good and bad, often very bad.
Nicaraguas . . (Mountain country.)	Vegetable staple; maize, beans, bananas, plantains, etc.	Rather short, strong; good qualities.
Urabas . . .	Mixed diet ; maize, etc., and game and fish. Red pepper much used.	Medium, partly well formed and muscular ; various in moral qualities.

Peoples.	Foods.	Physical Character.
Coybas . . . (Panama.)	Mostly vegetable. Maize, bananas, plantains, etc.	Medium, strong, straight.
Guyanos . . .	Cassava bread, maize, fruit, sweet potatoes, yams, etc.; insects.	Medium, 5 ft. 5 in., well formed, robust.
Arawaks . . .	Manioc the staple. Flesh, fish, cassava. Very frugal.	Short, muscular, well developed, agile; acute senses. Once a powerful nation, now greatly reduced by war.
Warraus . . (Related to the Arawaks.)	Game, fish, blood, insects.	Inferior physically. Very short; badly formed. Low morally. Very small in number.
Macusis . . .	Mandioca, sweet potato, pine-apple; game, birds, fish.	Small. Rather high morally.
Galibis . . .	Flesh, fish, manioc, sweet potato, yams.	Very short, well formed, not vigorous.
Caraibo . . .	Cassava bread, yams, bananas, plantains, maize, fish, birds.	*Above* medium. Nervous, stout, robust. Better developed than any other Guranian.
Alayas . . .	Almost exclusively vegetable; cassava, maize, etc.	Medium, active, graceful, not robust. Refined.
Orinocos . . .	Flesh, fish, maize, etc.; one principal meal only; drinkers of intoxicants.	Short and tall, both; robust, muscular, not enduring. High morally.
Moxos . . .	*Game, fish*, maize.	Medium, robust.

Peoples.	Foods.	Physical Character.
Guarayas . .	Vegetable.	Tall, well formed, moral, high in qualities.
Chiquitos . .	Maize, roots, rice, vegetables.	Medium, robust. Rather high morally. Intelligent.
Yuracares . .	Flesh, fish, much fruit, maize, mandioca, bananas. Gluttonous.	Fine, well built, strong.
Tupis . . .	Flesh, fish, human flesh. Mandioca, etc.	Medium, strong.
Botocudos . .	Chiefly animal.	Medium, strong, robust.
Coroados . .	Chiefly vegetable; sweet potatoes, maize, fruits, bananas, etc. Much flesh also. Insects, vermin, etc. One principal meal.	Very short, robust.
Quichuas, or *Peruvians.*	Almost all vegetable. Maize, pulse, potatoes, etc.	Medium, muscular, well formed, handsome.
Chunchos . .	Mixed.	Tall, robust.
Cholones. . .	Dried meat, fish, maize, fruits, nuts; human flesh formerly.	Medium, strong, robust, pleasant. Morally bad. Women old at thirty.
Paraguayans .	Flesh and fish chiefly.	Medium, finely formed; acute senses.
Pampas . . .	Animal food, blood, mare's flesh.	Short, ill developed, muscular, coarse.

Peoples.	Foods.	Physical Character.
Peguanches . .	Flesh, maize, water.	Robust, vigorous; white teeth.
Araucanians .	Chiefly vegetable, flesh, blood.	Medium, robust.
Patagonians .	Animal food chiefly. Abstemious.	Very tall; strong, well formed; enduring.
Fuegans . . .	Animal food chiefly; game, fish.	Low, stunted, gentle. Many are degraded, dirty, and uncouth.
Southern Asia, etc.		
Assamese . .	Rice, boiled vegetables, a little salt, and oil; a little fish; fermented liquor; milk rarely used. The rich eat fish, sweet potatoes, beans, melons, etc.	Short, robust.
Kocchis . . .	Buffaloes, goats, sheep, pig, chicken, etc.; fermented liquor.	Short.
Bodo-Kacharis.	Rice, maize, millet, yams, etc. Various animals, pork, fowl, fish, etc.; fermented liquor.	Fine, athletic, well formed. Quiet, cheerful, active, industrious. The Bodos and Dhimals have many good qualities; few vices.
Khassias . .	Rice, maize, millet, potatoes; fish or flesh daily; milk rarely.	Short, robust.
Kolarians . .	Rice, various animals, maize, millet, beans, etc.; rice beer.	Medium, robust.

Peoples.	Foods.	Physical Character.
Garos . . . (25° and 26° N. lat.).	Largely animal, flesh and blood. Rice, millet, arum, etc.	Rather short, robust, muscular; capable of great exertions.
Oraons . . .	Rice, pulse, various flesh, especially pork.	Like the Kolarians. Very cheerful.
Paharias . .	Maize, sorghum, sweet potatoes, plantains; pork, goats; rice beer.	Medium, slender, well formed.
Gonds . . .	Rice, millet, game, fish.	Short, 5 ft. 2 in.; low qualities, but truthful; unsteady.
Khonds . . .	Rice, dahl, beans, various flesh; fermented liquors.	Medium; very robust and enduring.
Bheels . . .	Maize, rice, many animals, wild fruits; fermented liquors.	Medium; not very strong; cheerful.
Neilgherries .	Grain, ragi, occasional flesh; milk.	Medium, well formed. The tribes vary greatly; most are short.
South Dravidians	Ragi, rice, curry, pepper, etc. Two meals a day. The rich eat flesh, and some tribes eat much flesh. Arrack or palm wine.	
Tamulians . . (Malabars, Ceylon.)		Active, industrious. The Moors are said to be a fine race.

Peoples.	Foods.	Physical Character.
Turco-Tatar Turanians Nogay Tartars	Horse flesh, rice, fowls, macaroni, tea, among the well-to-do. The poor eat meat pasties, macaroni, bread, millet, etc.	Strong, well made, slender. Teeth white.
Madagascar . (Oceano-Melanesian race.)		
Sakalavas . . (500,000.)	Flesh, various vegetables, pigs, etc.	Above medium; well developed, strong, athletic, quick, lively, intelligent.
Betsileo . . . (High mountain region.)		Large-boned, muscular; not energetic or ambitious; peaceful, agricultural.
Banzanozano . (Tankay.)		Occupy a narrow valley. Strong, robust. Many act as porters.
Sihanika. . .	Rice; fermented liquor.	Occupy low, marshy country. Indolent, intemperate.
Bara		Wild, suspicious; robbers.
Malagasees generally. Most races. (Much mixed with Europeans, Arabs, and Negroes.)	Meals at noon and sunset. Much animal and vegetable food; much spirituous liquor. Strong condiments. Flesh largely eaten by all but the poorest. These poor live on yams, manioc, sweet potato, and other roots. Rice is the staple,	Mostly below medium. Limbs small, well formed, regular. Fine regular white teeth. Not strong; easily fatigued. (But the Hovas are robust, active, finely formed.) Apathetic, indolent, gluttonous, deceitful.

Peoples.	Foods.	Physical Character.
	and is eaten with vegetables, beef, or poultry, shrimps, crayfish, many kinds of fruit. Maize, boiled or as bread. Monkeys, boars, crocodiles, turtles are devoured greedily.	
Ipalaos Islands (Caroline Archipelago.)	Bread fruit, vegetables, fish, yams, sweet potatoes, taro, bananas, cocoa-nuts, birds, eggs, turtles, shell-fish. Fermented bread-fruit a favourite dish. Water the ordinary drink. Palm wine occasional. On the Barrabee group dog's flesh much eaten.	Above medium; equal physically to the best of their race. Strong, muscular, well made, "endowed with great strength and agility." "The most brilliant white teeth."
Palos	Yams, bananas, cocoa-nuts, fish, shell-fish, taro; occasionally eggs, birds, pigs, goats; cocoa-nut milk, palm wine.	Like the Ipalaos generally. Cheerful, friendly, hospitable in the extreme; industrious, active, intelligent, strong, vigorous.
Polynesian Mariannas (Modern.)	Beef, rice, etc.; brandy, whisky.	Medium; robust, athletic, enduring. "Brilliantly white and superbly ranged teeth." Indolent; intemperate.
Tararoas . .	Cocoa-nuts, bananas, yams, taro, bread-fruit, fish, shell-fish, occasionally hogs and fowls.	Rather slender; strong, muscular. More robust and stately than the Marshall Islanders.

Peoples.	Foods.	Physical Character.
Chamorres . .	Bread-fruit, rice, fish.	Higher classes very strong, symmetrical, rather tall. Lower classes less athletic, but strong and agile.
Radaks and Raleks	Pandanus fruit, cocoa-nuts, yams, taro, fish, shell-fish; bread-fruit on some islands; gin much drunk.	Like the Ipalaos. Well proportioned, rather robust. Teeth white and regular.
RED INDIANS, ETC.		
Mobilians . .		Tall, finely formed, robust. Temperate, till enslaved by European drink. Remarkably swift on foot, and agile.
Choctaws . .		Great power of endurance, and force of character. Mild in disposition.
Seminoles . .	Maize and flesh.	Tall, 5 ft. 8 in. to 5 ft. 10 in. Athletic, phlegmatic, fickle. Originally temperate; corrupted and drunken on European spirits.
Shawanese . .	Flesh, fish, maize.	Physical qualities like other tribes. Active, sensible, cheerful.
Apaches . . . (New Mexico.)	Flesh of game, and, in scarcity, of rats, lizards, etc. Pinon-nuts and other fruits; beef, mutton, horse flesh.	Slender, wanting in muscular development. Robust, well formed, agile; ferocious, cunning, cruel; gluttonous.

Peoples.	Foods.	Physical Character.
Navajos . . .	Game and many kinds of animals; also maize, pumpkins, beans, etc.	Nearly 6 ft. tall; are well proportioned, strong, active.
Shoshones . .	Flesh, fish, rabbits, rats, mice, insects, various vegetables.	Not well developed; not tall; morally low.
Bonaks . . .	Roots, game, fish, reptiles, wild potato, apples, berries, acorn bread.	Rather inferior; below medium; ill-looking, degraded, and cruel.
Commanches .	Chiefly animal, buffalo, pinon-nut.	Very well developed; 5 ft. 10 in.; robust, muscular, brave; temperate.
Pueblos . . . (New Mexico and Arizona.)	Vegetable and animal, maize, deer, fowl, wheat, fruit, fish.	Not well developed; 5 ft. But the Pimas are remarkably well formed; tall, many over 6 ft.; muscular; teeth white. Temperate.
Chippeways . . (Far North.)	Game, deer, buffalo, bear, hare, wild rice, roots, a little maize.	Rather inferior as Æoneans; 5 ft. 10 in. Slender, not strong. Great walkers; very fleet; indolent, cruel, timid.
Knisteneaux . (coast of Labrador, etc.) (A branch of the Algonquins.)	Chiefly game; fond of big feasts.	Well developed, nimble, active, peaceable. Hunters and fishers.

Peoples.	Foods.	Physical Character.
Pawnees . . .	Maize, buffalo, beans, squashes, etc.	Once powerful and warlike; reduced by smallpox and whisky. Above medium height; teeth well ranged; moral character degraded by traders, etc.
Dakotas . . . (Sioux.)	Game, fish, maize, wild rice, maple sugar, roots; milk a rarity. No regular meals.	Robust, well formed, medium height, brave, truthful.
Osages . . .	Buffalo, maize, beans, pumpkins, wild plums.	Tall, of great physical strength, brave; now peaceable.
Hidatsas . .	Buffalo, bear, beaver, fish, turtles, maize, beans, squashes; formerly maize a staple food, now flour.	Tall, muscular, well formed; character good.
Klamaths . .	Fish, flesh, roots, berries, acorns.	Tall, muscular, well formed; moral character low.
Haidaks . . .	Fish, oil, birds, berries, inner bark; intoxicants to excess now.	Well developed, tall; women athletic; character good before civilisation, very bad after.
Mandans . .	Formerly almost all animal, now maize, beans, melons, etc., besides flesh.	Medium, vigorous, robust.
Haidas . . .	Fish, flesh, oil, berries, bark, etc.	Tall, well formed.
Nootkas . . .	Fish, etc.; roots.	Robust, well formed.

Peoples.	Foods.	Physical Character.
Nisquallis . .	Game, fish, roots, berries.	Short, strong.
Salish . . .	Fish, flesh, roots.	Medium to tall, well built, muscular.
Chinooks . .	Fish, flesh, nuts, fruits, roots, berries.	Small; morally low.
Tacullis . . .	Fish, oil, fat, putrid meat, roots, berries.	Tall, well formed.
Kutchins . .	Deer, bear, fish.	Medium, well formed, high morally, honest, clean.
Thlinkeets . .	Halibuts, herrings, oil, bear, deer. Two meals, noon and evening.	Medium; far superior to Eskimo; robust.
Eskimo . . .	Fat, oil, fish, flesh, birds, cranberries, etc.; gluttonous.	Small, badly proportioned, robust; teeth well ranged.
Karulits . . .	Reindeer, seals, birds, walrus, fish, oil.	Very small, below 5 ft.; very active and strong, well built.
Koniagas . .	Flesh, fish, blubber, roots, berries.	Medium.
Aleuts . . .	Flesh, fish.	Robust, active, ill formed.
Namollos . .	Flesh, fish, seaweed.	Very active; runners.
Aeneo-Maronians	Maize; captured animals.	Stalwart, muscular, fleet, acute of sense, enduring, brave, cruel.
Mengwes . . .	Venison, game, chiefly maize, squashes, groundnuts, berries, maple tea.	Well developed, fine in stature, hardy, robust.

Peoples.	Foods.	Physical Character.
Hurons . . .	Elk, beaver, bear, porcupine, hare, geese, ducks, fish; maize the staple. "When they started out for the enemy's country, they carried a bag of corn meal, and roasted maize grain for their subsistence."	Robust, tall, well made, agile, fleet; were exceedingly cruel, and cannibals.
Algonquins . .	Maize the national dish. Flesh, fish, walnuts, chestnuts, acorns.	Tall, well developed, not very muscular, enduring, coarse, good teeth; fiendishly cruel, gluttonous, licentious.
Narragansetts	Maize, chestnuts, game, fish.	Like the Algonquins physically.
Abenaques . .	Flesh, fish, maize. No regular meal-hours.	Medium, robust, healthy; no deformed, deaf, dumb, etc.; white teeth; acute senses; cruel, cunning.
Micmacs. . . (Nova Scotia.)	Game, fish, dogs, reptiles, maize, ground-nuts, acorns, roots, dried corn; soup the drink.	Tall, coarse, gluttonous.
Lenapés or Delawares.	Flesh, maize, roots, beans, etc.; water. No regular meal-time.	Above medium; nimble, well proportioned; intensely cruel.
Powhattans . .	Maize, fish, flesh; water.	Tall, well formed, robust, vivacious, spirited.
Tuscaroras . .	Flesh and maize, wild fruits, peas, potatoes.	Tall, well formed, agile, rather strong; extremely cruel.

Peoples.	Foods.	Physical Character.
Natchez . . .	Hominy (maize) pancakes, chestnuts, beans, various animals.	Tall, finely proportioned.

South Seas, Australasia, etc.

Tahitians . .	Bread-fruit (staple) is by all classes considered the staff of life. Sweet potato, taro, vi or Brazilian plum, jambo apple; fish, crabs, etc., much eaten. Hogs a luxury, dog's flesh commoner. No regular meal-time. Principal meal in evening. A mild intoxicant.	Strong, tall, vigorous, athletic; happy, open, candid, merry, sociable; women graceful.
Marquesans .	Bread-fruit, cocoa-nuts, bananas, sweet potatoes, cucumbers, cresses, ginger. Pork, chicken, fish; water, sea-water; popoi (fermented bread-fruit). Cannibal feasts.	Tall, fine, muscular, gentle, open; excellent teeth.
Nukahivas . .	Bread-fruit, popoi, bananas, yams, sweet potatoes, fish, kava. Cannibal feasts.	Robust, tall, finely formed in the upper class, open, animated. Lower class shorter, but pleasing. Teeth most beautiful; senses most acute.
Pomotoos . .	Vegetable; flesh rarely; taro and cocoa-nuts, bread-fruit, bananas, sugar-cane; fish, shell-fish.	

Peoples.	Foods.	Physical Character.
Waihus . .	Formerly sweet potatoes, taro, yams, plantains, fish, birds' eggs. Flesh scarce.	Medium; slender, well made; straight teeth; friendly, hospitable, pleasant. Formerly cannibal.
Tongas . . .	Bread-fruit (staple), plantains, yams, cocoa-nuts, fish, shell-fish, sugar-cane, ti-root. Hogs, fowls, and turtles for the chiefs. Meals at about one and six—no breakfast.	Remarkably well formed, strong, vigorous, muscular, agreeable, animated, some "absolute models of perfect figures," some ungainly; peaceable, affectionate, brave, ingenious, persevering; intellect good.
Rotumas . .	Bread-fruit, yams, bananas, cocoa-nut, fish.	Were well proportioned, full of life and gaiety, friendly, noisy, fickle, indolent; excellent teeth.
Samoans . . .	Bread-fruit, fermented bread-fruit, bananas, cocoa-nuts, taro, yams, fish, hogs, fowls. Vegetable food sufficient to meet all their wants. Meals twice a day.	Were remarkably well developed, tall (5 ft. 10 in.), stalwart, robust, with pleasing features. Moral character good, tender to children, mild, hospitable, indolent.
Maoris . . .	Formerly almost exclusively vegetable and fish. Dogs, rats, sweet potatoes, roots, seals, grubs; water.	Tall, well formed, muscular, vigorous, high in morals and intellect, generous, indolent, irritable, cruel. Women short and coarse-looking.

Peoples.	Foods.	Physical Character.
Hawaiians . .	Fish, bread-fruit, taro, yams, sweet potatoes, cocoa-nuts, plantains, sugar-cane, fern-root, locusts. Richer classes, hogs and dogs. Fermented bread. Fruit much esteemed. Water the ordinary drink.	Above medium; well formed, muscular; excellent teeth. Many of lower classes short and bow-legged. Affectionate, hospitable, kind to children. Intellect, average.

Mr. Featherman contributes the following observations to the volume dealing with the Turkish and Turanian races generally:—

The *Turanian* stock, with the exception of the Chinese and Japanese, has been "deficient in the loftier flights of the imagination, and its reasoning powers are incapable of grasping abstract principles and speculative ideas. Its mode of thinking is a dull, unvaried routine." . . .

"Its mighty legions overran the most beautiful parts of the civilised world, and humbled the proudest and most powerful nations, marking its track with fire and sword, and leaving nothing behind but death and utter desolation." . . . Now, "the Turanians, who were the universal tyrants and oppressors, who seem to have been born to command, crawl in the dust before that mighty spirit which science has evoked, and which is destined to rule and regenerate mankind."

The Turanian stock is said to have originally developed in Siam, or at least in Southern China.

Osmanli, the Turks, originally inhabited the neighbourhood of the Altai Mountains, afterwards the strip

between the desert of Khiva and the Caspian. They were remarkable for personal strength and valour.

They were originally pure Turanians, but are now exceedingly mixed. Georgian, Circassian, Greek, Arab, Jew stock became intermixed.

The semi-Iranian or Aramean Osmanli, by Circassian, Georgian, or Greek women, "exhibit perhaps the highest perfection of manly beauty, united with a healthy and vigorous constitution, that the world has ever seen." The women are said to be the loveliest of their sex.

The unmixed Turanian Turk is rather short, compact, well built, with low forehead, stupid, dilatory. While they were still wandering hordes of shepherd warriors, they were brave in the field, faithful, and generous. But when they became mighty conquerors, and the most powerful empires yielded submission to their warlike spirit, they became intoxicated with prosperity; they were arrogant in their pretensions, cruel and ferocious to those who excited their jealousy. With the Koran as all-sufficient, they remained ignorant. They exercised absolute control over the conquered races and subject classes. Then the canker of degeneracy attacked them.

The Osmanli have still, however, some excellent qualities; they are generally free from crime, devoted to parents and children, temperate and frugal, religious. The pure Turk is unintellectual, illogical, matter-of-fact, fatalistic. Those of mixed blood are much more intelligent.

Looking back over the ground traversed, we see that in all climates a high degree of health and

strength may be attained by a tribe living on a long-customary diet, whether mainly flesh, or mixed, or purely vegetable.

The columns below exhibit a list of tribes and communities which were clearly noted in recent times as robust: the first column is composed of large flesh-eaters; the second of vegetarians, or mixed feeders whose diet has only a little addition of flesh or fish.

I wish to state very emphatically that the list is neither exact nor complete,—cannot be so with present information, but I have endeavoured to hold the balance even, and believe the distinct preponderance of one of the scales represents the truth.

I may observe that a very large number of African tribes, and the hundred and sixty peoples of India who speak different languages, are not included. These are mostly non-carnivorous.

Flesh-Eating.		*Practically Vegetarian.*	
British navvies.	Tall.	Scotch, Irish.	Tall.
Spanish miners.		Cornish.	
Laplanders.	Short.	Northumbrians.	Tall.
Kolashin Montenegrins.	Tall.	Northern Italy.	
Koreans (some).	Tall.	Calabrian herdsmen.	
Kirghiz Kozaks.		Roman Campagna.	
Chin Hills Tartars.		Piedmontese.	
British Columbians.		Neapolitan lazaroni.	Tall.
Cree Indians.		Spaniards.	
Southern Red Indians (partly).	Tall.	Portuguese water-carriers.	
		Swiss of Berne.	
Bedouin Wahabees (some).		Swiss woodmen.	
Arabs of the Hedjaz (mixed diet).		Swiss mountaineers.	Tall.
		Bavarian Highlanders.	
Druses (some).		Tyrolese wood-cutters.	
Moors (some).		Carpathian Poles.	
Egypto-Libyans (ancient).		Carpathian Hungarians.	

Flesh-Eating.

Tcheremies (mixed diet).
Livonians (mixed diet, vegetable and fish).
Crim-Tatars (mixed diet).
Bashkirs.
Tatar Toorkies.
Chiapans, etc.
Mayas (mixed diet).
Aztecs.
Mosquitos.
Arawaks (mixed diet).
Orinocos.
Moxos.
Guracares.
Botucudos.
Chunchos (mixed diet). Tall.
Cholones.
Peguanches.
Araucanians (some).
Patagonians.
Bodo-Kacharis.
Khassias.
Garos.
Oraons.
Khonds (chiefly vegetable).
Sakalavas. Rather tall.
Ipalaos (some). Rather tall.
Palos (some).
Polynesian Mariannes.
Mobilians (mixed diet).
Choctaws (mixed diet).
Seminoles (mixed diet). Tall.
Shawanese (mixed diet).
Navajos (mixed diet). Tall.
Commanches. Tall.
Pimas (mixed diet). Tall.
Dakotas.
Osages (mixed diet). Tall.
Hidatsas. Tall.
Klamaths (mixed diet). Tall.
Haidas. Tall.
Nootkas.
Salish.
Thlinkeets.

Practically Vegetarian.

Polish soldiers (19th century).
Szeklers.
Magyars. Tall.
Swedes of Dalecarlia, etc. Tall.
Far north of Sweden, Haparanda.
Norwegians in parts.
Greek boatmen, etc.
Turkish labourers.
Turkish soldiers.
Constantinople and Smyrna porters, etc. Tall.
Chinese country people. Tall.
Japanese. Short.
Madras messengers, etc.
Sikhs.
Himalayans.
Tuarick (Sahara). Tall.
Jennans, Central Africa.
Arabs, N. Africa.
Suakim drivers.
Kaffirs (some tribes). Tall.
Southern Red Indians (partly). Tall.
Tobasco Indians.
Mexican Indians.
Peruvians.
Opon Indians.
Italians of Argentina.
Canary Islanders.
Friendly Islanders.
Maoris.
Malays in some parts.
Bedouin Wahabees (some).
Druses (some).
Kanoos.
Moors (some).
Barbary Bedouins.
Egyptian Arabs.
Yezidees.
Osmanli.
Tavestar Finns. Rather tall.
Mixed Magyars. Tall.
Chichemics. Tall.
Zapotecos.

Flesh-Eating.		*Practically Vegetarian.*	
Karalits.		Gayanos.	
Aleuts.		Caraibo (mixed).	Rather tall.
Aeneo-Maronians.	Tall.	Chiquitos.	
Mangroes.		Peruvians.	
Hurons.	Tall.	Araucanians (some).	
Abenaques (mixed diet).		Assamese.	
Powhattans (mixed diet).	Tall.	Kolarians.	
Maoris (mixed diet).	Tall.	Ipalaos.	Rather tall.
		Palos (some).	
		Tararoas.	
		Chamorres.	Some tall.
		Tahitians.	Tall.
		Marquesans.	Tall.
		Nukahivas.	Tall.
		Tongas.	
		Samoans.	Tall.
		Maoris.	Tall.

The enumeration of these tribes shows that at least sixty-six living on a mixed diet, or chiefly flesh, were robust, and of these nineteen were tall; and that seventy-six living on a practically vegetarian diet (including in many cases animal products) were robust, and of these twenty-one were tall. Height is apparently little affected by the kind of diet, if it is sufficient in quantity and nutritious in quality.

Strength is attainable with a dietary almost all flesh, or mixed, or all vegetable. But, on the whole, strength is more common and greater among mixed than among carnivorous feeders, and more common and greater among *certain classes* of vegetarians than among flesh or mixed feeders.

These results appear in view of the whole array of facts which have been presented, but they appear also from a comparison of the strength, height, etc., of persons living on different dietaries in the same province or community.

It will be found that, *cæteris paribus*, any set of healthy persons in a locality living on a rightly chosen vegetable diet surpasses in strength and well-being a set in equal conditions living largely on flesh. Rather copious testimony to the same effect from athletics will be adduced later.

Further, the most remarkable instances of any class possessing extreme strength or endurance are found among the plant-eaters. No doubt, on the other hand, there are millions of vegetarians, like the poor cultivators of parts of India, who are weak, but these are badly nourished, owing to poverty, or weakened by malaria and other cherished infections.

Let us look at the composition of the diets which produce very great strength and health in nations or classes—

Very strong.	Diet.
Ancient Persian soldiers .	Bread, vegetables, water.
Egyptian pyramid builders.	Lentils, bread, etc.
Judas Maccabæus and his army.	Vegetables, bread, etc.
Travellers in the East, on long journeys.	Bread, figs, or raisins, parched corn, water.
Homeric heroes, traditional.	Roast beef, etc.
Athletic Greece . .	Maize, vegetables, oil, etc.
Roman soldiers . .	Corn with lard, etc.
Saracens	Rice, fruits, milk, barley bread.
Ancient Egyptians . .	Spelt bread, fish, wine, etc.
Many early Christian saints.	Bread, fruit, vegetables, nuts.
Ancient Britons (see Plutarch, Goldsmith).	Acorns, berries, roots, herbs, water.
Ancient Gaulish tribes .	Nut bread, milk, herbs, berries.
Earliest Greeks . .	Barley, acorns, beech-nuts, etc.
Irish	Potatoes, buttermilk; earlier — vegetables, milk, meal, mushrooms.
Scotch	Oatmeal, buttermilk, vegetables, sometimes flesh.

Very strong.	Diet.
Lancashire and Yorkshire labourers.	Hasty pudding, oatcake, water, etc.
Scottish fisher folk . .	Porridge, fish, etc.
Cornish miners . .	Potatoes, bread, etc.
Orkney men . . .	Mainly vegetarian; porridge, potatoes, milk, fish.
Porters, etc. (Glasgow?) .	Potatoes, etc., buttermilk.
Piedmontese (Marseilles) .	Chiefly vegetarian formerly; maize, etc.
Northern Italians, formerly	Maize, fruit, vegetables, macaroni, eggs, bread.
Certain districts of Italy .	Chestnut bread, etc.
Other parts of Italy . .	Maize, beans, nuts, etc.
Spanish labourers and soldiers.	Peas, melons, bread, batatas, tomatoes, egg-plant, fish.
Spanish miners . .	Flesh, bread, fruit, vegetables, oil, potatoes.
Portuguese water-carriers .	Bread, olla podrida, chestnuts, fruit.
Swiss woodmen . .	Cooked flour, bread, butter, salt, water.
Bavarian highlanders .	Grain, pulse, salads, vegetables, fruit, milk.
Tyrolese wood-cutters .	Cooked flour, water, butter, salt, and pork.
Polish and Hungarian peasants.	Oatmeal, bread, and potatoes.
Magyar peasants . .	Potatoes, bread, a little flesh, and wine.
Saatersdal Norwegians .	Chiefly vegetables or grain, alcohol.
Dalecarlian Swedes . .	Grain, milk, cheese, etc.; probably fish also.
Laplanders (some) . .	Flesh, blood, barley, coffee, alcohol.
Finns (some) . . .	Rye, barley, potatoes, fruit.
Russian grenadiers . .	8 lb. black bread, 4 lb. oil, 1 lb. salt, for eight days.
Russian labourers at a port.	Rye bread, garlicks, etc.
Siberian soldiers . .	Rye bread, soup.
Greek boatmen . .	Black rye or wheat bread, raisins or figs, etc.
Turkish soldiers . .	Bread, mutton, beans, rice, butter, salt.
Part of Ottoman army .	Vegetarian generally, water-drinkers.
Boatmen, etc., at Constantinople.	Bread, cucumbers, cherries, figs, dates, or other fruit; a little fish.

Very Strong.	Diet.
Porters at Smyrna . .	Vegetable ; grain or fruit.
Kolashin (Montenegro) .	Maize, milk, oil, onions, mutton.
Monks of Cyprus . .	Beans and barley bread, flesh rarely.
Chinese labourers (country)	Rice, vegetables ; sometimes a little fish or flesh. In other parts, rice, millet, sweet potatoes, beans, etc.
Korean countrymen (some)	Rice, eggs, dried fish, flesh ; or rice, beans, spice, vinegar, radishes ; occasional flesh.
Japanese soldiers . .	Rice, 36 oz., vegetables, some fish. Barley and beans at times.
Samurai	Unhulled rice chiefly, some fish or eggs, dried fruit, tea; cool, not cold, water.
Tatars of the Chin Hills .	Flesh, alcohol, etc.
Madras messengers . .	Boiled rice, etc.
Himalayans . . .	Rice, etc.
Sikhs	Vegetarian chiefly ; wheat flour.
Armenian porters . .	Bread, olives, cheese, onions, salad.
Jenna people (Central Africa).	Chiefly yams and maize.
Arab tribes in North Africa. [Endurance, health, and agility extraordinary.]	Dates, milk, etc.
Some native races of South Africa.	Millet, sour milk, etc.
Tobasco Indians (Mexico) .	Maize, sugar, etc.
Mexican Indians and miners	Maize, sugar, omelets, vegetables.
Chilian labourers (from Darwin).	Two small loaves, sixteen figs, boiled beans, roasted wheat.
Yaquil miners (from Darwin)	Boiled beans and bread.
Rio Salada Spaniards .	Vegetarian.
Bolivian troopers . .	Maize, cocoa, water.
Brazil slaves . . .	Rice, fruit, bread, roots.
Congo slaves (Rio) . .	Vegetarian.
Canary Islands labourers .	Coarse vegetables, fruit, grain.
Opon Indians . . .	Maize, sugar-cane, game, bananas, bread-fruit, mangoes, oranges.
Friendly Islanders . .	Bread-fruit, potatoes, taro, fruit, fish.
Inelaos Islanders . .	Bread-fruit, vegetables, fish, yams, potatoes, taro, bananas, cocoa-nuts, birds, eggs, turtles, etc.
Comanches (Red Indians) .	Animal chiefly ; buffalo, pinon-nut, etc.
Osages (Red Indians) .	Buffalo, maize, beans, pumpkins, wild plums.

The result of this enumeration goes much further than I had expected. It appears that, of seventy-two classes of persons who have shown exceptional strength, endurance, and health, sixty-one were practically vegetarian, and only thirteen more or less, mostly less, carnivorous. Excluding Homeric heroes, only five were large eaters of flesh or fish. So that we may, I think, conclude safely that the very large majority of the world's best examples of physical development have been practically vegetarian. Probably the highest degree of national activity in the modern world is shown by the Japanese, with a diet of whole rice, beans, vegetables, and some fish, and with water or weak, milkless tea for drink; and the highest degree of bodily capacity for labour may have been reached by Darwin's Chilian miners, with a diet of bread and boiled beans, or the "seeds of leguminosæ."[140] Many other classes or races, living on rice, bread, and vegetables or fruit, or on rice and beans, or lentils and vegetables, or on maize, oil, and vegetables or fruit, or on potatoes, milk, and vegetables, or similar diets, with well-proportioned quantities, have nearly approached the two named. A diet of parched corn and dates or other fruit, and a little oil or lard, seems to be remarkably well fitted for feats of long exertion, such as severe marches. Barley, millet, maize, rye, oats, and especially rice, seem each capable of sustaining a population in high health with little additional nutriment, but oil of some kind (or animal fat) is clearly of much value, or even necessary, especially in cold climates. It is important to remember that most of the races which maintain their powers on rice eat the unhulled grain, which contains more materials of value to the constitution

than the polished rice of Europe. Nuts, especially chestnuts, seem to form a very important part of the diet of some of the strongest peasantry in Southern Europe, and, considering their nutritive qualities, are insufficiently appreciated.

I have not in the above summary included either athletics or mental strength and endurance, but intend to refer to these subjects in separate chapters.

CHAPTER VII

Diet of Communities; including Armies, Religious Sects, Workhouses, and Prisons

There is much of interest in the records of the past relating to the diets of separate communities, such as Christian and Buddhist sects and various orders of monks, also of soldiers in the field, and of classes engaged in specially laborious work.

It will not be necessary to give details of the fare which was usual in the navy, in jails, hospitals, prisons, and workhouses, but the main dietaries of soldiers in several countries will be given, as showing the articles and amounts agreed upon by authorities in the last half of the nineteenth century as most important for strength and activity. They are based, I think, upon considerations which, with fresh knowledge, require some modification, though, no doubt, they go very far in securing efficiency in time of war.

Recent ideas of what is most conducive to health are in several respects far from being identical with the hypotheses of fifty years ago, but those hypotheses have still a tight hold on practice. The value of wine, spirits, and beer has been proved to be rather on the side of the enemy, and the most efficient officers, imitating Cæsar, discourage the use of alcohol in the field; the allowance of flesh is reduced, and

fresh vegetables or lime juice are considered indispensable.

Dietaries of armies, navies, prisons, workhouses, and hospitals a century ago included much alcohol and flesh, and much strong medicine.

At present the tables still include in many cases a large amount of flesh, but less than formerly, while at the same time the consumption of flesh and of alcohol has largely increased in the general population.

Signs are not wanting that the astonishing power of sustaining long campaigns shown by the Romans and by the men under Cyrus, Gustavus Vasa, and others, and especially now by the Japanese, will cause inquiry to be made as to the possibility of increasing the efficiency of land and sea forces by a reconstruction of dietaries on modern scientific lines.

Religious societies claim our first attention, for they have the strongest influence on their members.

There is no community more widespread, and none more tenacious of its customs, whatever the nation among which it dwells, than the Hebrew race.

The Jews have for thousands of years lived on a mixed diet of bread, lentils, dairy produce, beans, and other vegetables, honey, fruit, flesh, and fish. They have thriven remarkably, or at least held their ground, in almost every country and climate. The richer Jews have been large flesh-eaters, and altogether luxurious ; the poorer have eaten comparatively little flesh, and exercised great discrimination in their choice of a nourishing diet. They do not generally poison themselves with alcoholic or other unsuitable stuff, like the majority of their less anciently civilised neighbours. The poorer classes, but not the

rich, maintain the "natural increase of population." The same tendency is seen in most luxurious societies.

The *Essenes* have been alluded to in Chapter IV.

The Carthusians of the Grande Chartreuse, numbering eighty, lived on bread, omelette, thin soup, vegetables, prunes, rice, and a little wine or liqueur. About twenty other Carthusian houses exist in Europe.

Pachonians. — The 1400 monks who followed Pachonius lived on bread, water, oil, occasional fruit and vegetables, and salt. Later there were 7000 Pachonians, and in the fifth century they were computed at 100,000.

The *Benedictines* had two meals a day, two cooked dishes, and one of fruit and vegetables.

The *Trappists* live entirely on vegetables, bread, salad, cheese, fruit, and water. Rarely they are allowed a small quantity of ale. On fast days the diet is further restricted. All visitors to Oelenberg testify to the excellent appearance of the monks, who are seldom ill, and whose average longevity is high. The institution has lasted 810 years. The monks rise at 2 a.m., and spend the day in alternate work and prayer. They have many sorts of handicraft, and they work diligently in the fields. The priests also do manual work. They retire to rest between 7 and 8 p.m.[1]

At the Trappist Monastery of Mount Melleray, Cappoquin, Co. Waterford, Ireland, the monks eat nothing but bread and vegetables and a little fish, and drink nothing but skim-milk and water. They have two meals, sometimes only one. They rise daily at 2 a.m., and are occupied till 8 p.m. Some of the monks are very old men.[2]

The physician to the monastery of Grande Trappe met with no case, during twenty-seven years, of apoplexy, aneurism, gout, cancer, or epidemic disease. This is an exceedingly noteworthy experience.

Another account of the Trappist diet gave the following as the usual fare:—17½ oz. black bread, 17½ oz. beer, two plates of vegetable soup, one plate of greens. They have three meals a day.[3]

Theosophists. — The Rev. James Clark, at the annual meeting of the Vegetarian Society on October 12, 1902, said he had recently found in America that the Theosophists were vegetarians, also the Seventh Day Adventists, a body of much energy, possessing a sanatorium in Michigan, where doctors, nurses, and patients, comprising a thousand persons, lived according to this principle. They numbered thousands in the States.[4]

Salvation Army.—Many of the officers, including the illustrious General, are wholly, or almost wholly, vegetarian. Their unusual activity of body and mind gives proof of the sufficiency of the fare to produce the highest health even in a depressing environment. In an Inebriates' Home, where the Lady Superior and nurses adopted the diet very reluctantly, and induced the patients also to become vegetarian, the change has been remarkably successful, and has conduced greatly to comfort, quietness, and health.

The *Doukhobors*, a Russian community, which has existed for about a hundred years, with the tenets of primitive Christians, and the quiet practice of a simple, God-revering life, have given a very interesting proof of their powers of colonisation in the British dominions since their emigration to Canada at the end

of last century. Expelled from Russia, they were helped to emigrate by English friends. In about two years they were independent cultivators, working heartily under new conditions in a new climate, free from debt, and able to tell their supporters that they were prospering on the crops for which the women had tilled the land, harnessed to the ploughs like horses. The Canadian Doukhobors number nearly 7000.

"In physique, the Doukhobor is a vindication of plain living and high thinking. In spite of vegetarian food and general hardship, . . . the Russian peasants are a sturdy, strongly built people, many of them nearer seven than six feet in height.[5]

The representative of the High Commissioner of Canada wrote, about two years after the migration: "These people are perhaps the most excellent settlers in the whole of the North-West Territory. For so young a settlement, the contented and joyous expression of the people was remarkable, and this I attribute to the energy and perseverance of the men and the excellent housekeeping qualities of the women." In 1901 the Minister of Justice said, "Not a single offence has been committed by the Doukhobors."

Since 1893 the brotherhood has owned property as it were in common, or rather, has freshly divided up the acquisitions of families, when inequality became sufficiently marked.

One writes: "When we began our communal life in 1894, we felt ourselves quite other men, as if we had been born afresh into God's world. Even the most decrepit of old men took to working with the rest." It is stated that these unsophisticated people

manifest in all their practical proceedings the most perfect exactitude of organisation.

The Canadian newspapers describe them as a fine-looking set, with honest faces and stalwart frames. The children looked the perfect picture of health. An old man of eighty-five was as active and happy as a boy. Disease is rarely known among them, said Mr. Blow, a well-known Canadian journalist. There is every appearance of comfort, happiness, and prosperity.[6] The most striking characteristic of the immigrants was the bright, kindly sparkle of their eyes, which quickly wins confidence in their character. All their habits show that they have keen minds. They are particularly clean, industrious, frugal, and moral. They are ready to help in any work, and made the ship's voyage almost a holiday time for the crew. They are kind to animals, and they do not eat flesh. They are fine agriculturists; wherever they have been left alone for a short time they have prospered, making the wilderness smile with cultivation.

There is much more of an almost marvellous character in the history, sufferings, and heroism of this community, for which I must refer to the small volumes published by Mr. Thomas Laurie and by Mr. Tchertkoff, of the *Free Age Press*, Christchurch, Hampshire.

The *Eden Colony*, near Berlin, has been described by Mr. William Harrison. The sight of the beautiful houses in the different allotments, mutual co-operative interest in one and all, the fruit and herbs and garden foods, produced a deep sense of gladness and hopefulness, prospectively, of a general widespread return to the land as the most practical way of redeeming the

soil to its God-appointed purpose. All the colonists [vegetarian] seemed happy, toiling in the unselfish spirit of brotherhood, rejoicing and sympathising together. There are about 105 persons in the colony, 40 children, who are very healthy, beautiful in complexion, and exceedingly lively, kind and pleasant with each other.[7]

Soldiers.—The traditional fare of the Homeric heroes has been already alluded to in Chapter IV. Athenæus observes that their meat was chiefly roast beef. In about the third century the Roman infantry received wheat, and the cavalry barley and wheat. The Romans ground and baked their corn, and smeared their bread with lard.

Froissart says that the Scotch fighting men in old times had boiled flesh in skins, a bag of meal, and a plate of iron, on which they made cakes.[8]

The Turkish soldier, about 1590, carried powdered meat, of which he took a little in warm water. Rice was his principal stay, bread was eaten sparingly, and he drank no wine.

In Queen Elizabeth's time, the soldiers ate corn, bread, beef, and wine; herrings and other salt fish, salt flesh, especially beef and bacon, cheese, butter, almonds, chestnuts, and hazelnuts; vinegar, honey, oil, beer, malt, and poultry.

According to Froissart, the food of the soldiers in the War of the Roses was—flesh 2 lb., bread 1 lb., a pint of wine.

In 1670 the soldiers' allowance was, in the field, 2 lb. of bread and $1\frac{1}{2}$ lb. of flesh, or an equal weight of cheese, and one bottle of wine or two of beer.

In Portugal, in 1808, the Duke of Wellington says,

"The rations will consist of 1 lb. of bread or biscuit, and 1 lb. of meat, salt or fresh. When bread cannot be delivered to the troops, they shall have 2 lb. of beef for their ration."

The food of the army of the United States Dr. Yorke Davies considers far and away the best for making physically powerful soldiers : 20 oz. flesh, 18 oz. bread, 16 oz. potatoes ; remainder, peas, rice, sugar, coffee, salt.[8]

In 1893 the British soldier was provided with the following :—12 oz. of flesh, 1 lb. of bread, and a grocery ration for extra bread, potatoes, milk, vegetables, tea, sugar, etc. At the canteens he would, besides, get for himself other articles, mostly cheese, bacon, preserved meats, and fish.[9]

The Committee on Soldiers' Dietary in 1889 reported that the free ration of bread and flesh, with an extra messing contribution of 3d. to 4d. a day, is, under proper management, sufficient to provide an ample diet.

In active service on the field a special scale is fixed, about as follows :—1 lb. flesh, 1¼ lb. bread, or 1 lb. biscuit, or 1 lb. flour, ⅙ oz. tea, ⅓ oz. coffee, 2 oz. sugar, ½ oz. salt, ½ lb. fresh vegetables when procurable, or 1 oz. compressed vegetables, and some extras when required.

In the Suakim expedition in 1885, the ration was—bread 1¼ lb., or biscuit 1 lb., fresh meat 1¼ lb., or preserved 1 lb., tea ⅓ oz., sugar 2¼ oz., salt ½ oz., potatoes or fresh vegetables 12 oz., compressed vegetables 1 oz., occasionally jam, and other extras. Lime juice was ordered to be given when fresh vegetables or potatoes were wanting.

The amount of flesh given even in tropical expeditions is remarkable; the best soldiers of ancient times, and some of the armies of to-day, did extremely well without any.

"The whole experience of recent wars," says Dr. Notter, "is against the issue of a spirit ration. There is no point, perhaps, on which there is a more unanimous opinion than on this one, that there should be no daily issue of a spirit ration. Dr. Bryden long since pointed out that there was nothing more inimical to the acclimatising process in India." But a light red wine, well diluted, is often found refreshing and useful, as at the end of a long march.

The French soldier received 26·4 oz. munition bread, 8·8 white bread for soup, 10·6 flesh (uncooked), 3·5 green vegetables, 1·1 dried, 0·5 salt. Twenty per cent. of the meat may be subtracted for bone. In war the bread was about 37 oz., and the flesh 14·11.

The German soldier received, for garrison periods—26 oz. bread, 5·3 meat, 3·18 rice, *or* 4·24 groats, *or* 8·12 peas *or* beans *or* 53 potatoes; for marches, etc.—35 bread, 17·65 meat (raw), 6 rice, *or* 6 groats, *or* 12 peas or beans, *or* 71 potatoes, 35·3 beer *or* 17·65 wine, 1·76 butter, 1·41 tobacco.

The Austrian soldier had, in the field, 30·8 oz. bread, 4·9 rice or preserved vegetables, 1·3 preserved soup, 10·6 fresh beef, 1 salt, 0·7 lard, 0·42 coffee, 0·46 sugar, 1·2 tobacco, 0·1 pint rum or brandy, *or* 0·63 wine.

In the Franco-Prussian war of 1870 the German soldier had daily, according to König:[10]—

Bread 750 grms., flesh 500, bacon fat 250, beer 1 litre. This gave 164 of proteid, 209 of fat, and 400 of carbo-hydrate. Each man had also 30 grms. of

coffee, and 60 of tobacco. "Such a diet, rich in fat," says Dr. Martin, "is fit only for the most strenuous exertion."

The Russian soldier, in peace—43·35 oz. rye bread, 32·65 flour, 7·24 flesh, 4·8 groats; in the large ration for war—36·15 rye bread, 21·67 flesh, 4·8 groats, and 2·72 butter or tallow.

The peace ration of the Italian soldier was—32·4 bread, 7·06 to 10·59 flesh, 0·53 bacon, 5·3 rice, 0·53 salt, 0·71 sugar, 0·53 roasted coffee, 8·82 wine.

The United States soldier had—20 fresh beef, or 22 salt beef, 18 flour, or 18 soft bread. When on fatigue—2·4 extra beans, 1·6 rice, 2·4 sugar, 1·6 coffee (green), or 1·2 roasted, or 0·32 tea. By a recent (1893) Act, 1 lb. of vegetables was added.

The native Indian soldiers had in Egypt in 1882—$1\frac{1}{2}$ lb. rice, or 2 lb. of atta, 4 oz. dhall, 2 oz. ghee, $\frac{2}{3}$ oz. salt, 1 oz. onions, $\frac{1}{6}$ oz. pepper. Where desired, 1 lb. of flesh was issued once a week in place of half the rice.

For the diet of the British navy I would refer to the *Treatise on Hygiene*. The diet of British merchant ships is extraordinarily rich: 1 lb. of bread, $1\frac{1}{2}$ lb. of beef or $1\frac{1}{4}$ lb. of pork, $\frac{1}{2}$ lb. of flour, and $\frac{1}{4}$ lb. of peas on alternate days.

"The troops who arrived with Omar Pasha stand the climate well," wrote the correspondent of the *Times* in August 1855. "I am not sure whether their temperance, bordering on abstemiousness, does not contribute considerably to this result. Meat is with them an exceptional article of food, and biscuit, rice, and beans are their daily diet."

The Ottoman army consisted, in the first half of

last century, of men of "herculean form" who rarely ate flesh.

The Swedish soldiers who came from the province of Dalecarlia were remarkable for strength and bravery; the old men were "as strong and brave as the young." This was accounted for by their simple habits, with a diet of bread and water. "Their progress was one series of triumphs till they placed Gustavus Vasa on the throne of Sweden." [11]

A recent letter from Tokio, by Mr. J. Gordon Smith, described the excellent hospital arrangements and treatment of the wounded in Japan.[12] A well-known London surgeon praised the hospitals as the best equipped he had ever seen, and an American surgeon gave similar testimony, adding: "To my mind, the ration issued to the Japanese soldier has much to do with his immunity from suppurative conditions following serious injury." This diet is rice, fish, and vegetables. He does his work on 36 oz. daily. "It is undoubtedly the diet of the Japanese soldier that is the great secret of the success achieved by the army surgeons. The soldiers are in superb physical condition, and they can far better stand the shock of a bullet wound or an operation than a man who is fed on unsuitable diet." Mrs. Earle remarks that "this perfection of health is attained without milk, which is rarely procurable in Japan." [13]

"The Japanese infantry," wrote Mr. G. Lynch, "were a surprise and revelation to most of the allies." . . . "There is a zest and a verve and a go about them, when in action, which I have never seen in any other troops. . . . The simple fare was ideal for campaigning. Broadly speaking, it consists of

rice, with what might be called a flavouring of strong-tasting dried fish, and mysterious brown condiments suggestive of curry."[14]

"The Japanese possess the greatest endurance of any people on earth." "The system of exercise, diet, and general mode of living has made the Mikado's people the healthiest, strongest, and happiest men and women in the world." A full course of training takes four years, and includes knowledge of anatomy, diet, hydropathy, proper indoor and outdoor life, and other vital principles. In the campaign of 1900 the Japanese outmarched the American troops by 50 per cent. The Japanese practically live upon a vegetable diet. Fish is eaten in winter. The foundation of their diet is rice. The system aims at developing and toughening every muscle of the body.[15]

Prisons.—Investigation into the diet of different classes about fifty years ago showed that the following amounts of solid food were consumed by each person per week :—

Farm labourer . .	122 oz.
Highest artisan . .	140 ,,
Pauper . . .	150 ,,
Soldier . . .	168 ,,
Prisoner . . .	217 ,,
Convict on hulks . .	239 ,,
Transported felon . .	330 ,,

It was a surprise to find that the convict and pauper had much more food than the labourer. Another surprise was the discovery that the independent labourer was healthier than the pauper so fed.

Governors of workhouses said the high diet carried off some of the inmates. The heavier diets were found to be the least healthy. Important returns from the jails showed that an increase in the average amount of sickness bore a direct proportion to the amount of diet. In the lowest diet series of the jails, 188 oz. solid food were given at 1s. 10¼d., or about 27 oz. a day. The percentage of sick per annum was 3, the mortality 1·6 per thousand. In the highest diet series, at 218 oz., costing 3s. 2d. a week, the percentage of sick was 23·5, the mortality nearly 4, that is, 1 in 266. In the intermediate, at 213 oz., costing 2s. 4d. a week, the sick percentage was 18, the mortality a little over 3 per thousand, that is, 1 in 320.

Where diet was reduced, mortality had in *no instance* been increased, but generally diminished.

Where animal food was diminished and vegetable increased, there the sickness was reduced.[16]

Dr. Farr found that of sixty prisons divided according to high, low, and intermediate diet, the annual attacks of sickness and the mortality were—

In the low . .	140	1·48
,, high . .	212 (?)	3·44
,, intermediate .	93	2·93

The number of prisoners was 267,800.

Experiments in diet on prisoners at Glasgow gave these results: Ten men were given light work, on the following diet—three meals a day, 13 oz. oatmeal, 3 lb. of boiled potatoes, 1½ oz. of buttermilk. Two were not very well at the beginning of the experiment; at the end, after two months, all were well. The average gain in weight per man was 4 lb.

Workhouses.—The following particulars are from Sir John Forbes' Memoranda made in Ireland in 1853 :[17]—

The dietary in the Killarney Union Workhouse is this—"The able-bodied adults receive no bread, but only stirabout for dinner and supper. This is made from equal parts of Indian meal and oatmeal, the allowance of the mixed meal being 8 or 9 oz. for breakfast and 9 or 10 oz. for dinner; at both meals buttermilk is allowed." "In addition, the children under fifteen, and the aged and infirm, were allowed bread—the former brown, the latter white. Potatoes were allowed on alternate days, $3\frac{1}{2}$ lb. to each able-bodied person." (P. 94, vol. ii.)

At Londonderry Workhouse working-men received, for breakfast, 7 oz. of meal, $\frac{1}{3}$ quart of buttermilk; for dinner, 12 oz. of coarse bread, 1 quart of soup of carrots, turnips, onions, cabbage, pepper, and oatmeal; and for supper, 6 oz. of mixed maize and oatmeal and $\frac{1}{3}$ quart of buttermilk.

At a workhouse at Steep in Antrim a small portion of meat was allowed in the soup three times a week.

In many of the workhouses two meals only were allowed in the twenty-four hours, and these consisted almost wholly of farinaceous matter, without a particle of animal food [flesh] from one year's end to the other. "When, however, it is remembered that the universal habit of the Irish people of the labouring class has long been to live almost exclusively on the potato, an article of diet much less nutritive than any of the kinds of meal which constitute the workhouse fare, the want of flesh as one of the articles, and the want of variety, will seem less extraordinary." "Even the

limitation of the meals to two would seem to be among the ordinary habits of the Irish peasantry." (P. 228.)

Sir John Forbes then gives a very interesting account and comparison of the Irish and English workhouse dietaries. "The English dietary," with its flesh, meaty soup, cheese, puddings, and vegetables, "will be regarded, I doubt not, as containing a much larger stock of nutriment than . . . the Irish." "Accurate chemical examinations, however, lead to a conclusion the very reverse of this."

A scientific opinion is then given, with analysis showing that the "dry nutriment," 18·65, of the Irish contains 4·4 of "azotised nutriment" (nitrogenous), while the English "dry nutriment," 15·5, contains only 3·9 of nitrogenous.

Meat, this authority states, is, weight for weight, "much more nutritious than bread," and 1 pint of buttermilk is equal in azotised matter to 4 oz. of flesh. He finds fault, however, with the monotony of the diet for indoor life, and so does Forbes. There should be an increased allowance, he thinks, of fresh vegetables.

He finds much fault in the land system of Great Britain and of Ireland, "where the position of the peasant is one of hopelessness, discontent, and stagnation; for what motive has he to induce self-denial, energy, and prudence? It is possible for the poorest young man in Germany, Switzerland, the Tyrol, Belgium, Holland, France, Denmark, Sweden, and Norway to purchase a garden or a farm if he is intelligent, prudent, and self-denying. It is a safer and more agreeable investment than that of a little

shop, which is the only one open to a poor peasant in England." (P. 381.)

Schools, etc.—In 1833 the children of an orphan asylum at Albany, New York, numbering 80 to 130, were put on a vegetable diet. Three years after the change was made the principal teacher reported: "The effect of the new regimen on the intellectual power of the children has been too obvious and too striking to be doubted. There has been a great increase in their mental activity and power. The quickness of their perception and the power of their retention daily astonish me."

Similarly, Mr. John Burdell reported of the children of field negroes that there was the utmost avidity and aptitude to learn. They were fed on corn meal, yams, peas, etc. But the children of the same age who got animal food were wholly different, slow to learn, and disinclined to study.[18]

Some years ago it was reported that at Dr. Fegan's Homes for Boys in London the vegetarian diet was adopted (since 1885) with great benefit. They had whole-meal bread *ad lib.* He said, after three years' experience, that though many of the boys came from a weakly stock, and were debilitated by neglect, yet "the incontestable fact remains that the general health of the boys is not only better than in ordinary families, but better than it has ever been before in our homes." If located in the country, he thinks there would be almost perfect absence of illness.

Other examples of communities or classes living simply are summarised below:—

The monks of Burmah, a very large proportion of the young men of the nation, eat only twice a day,

and never after noon. They are altogether temperate and frugal. Their food is rice, curry, and fruit.

The messengers from Madras and Calcutta to Bombay formerly ran sixty-two miles a day for a thousand miles or more. They were tall and athletic. Their staple food was boiled rice.

The Bolivian troopers marched eighteen to twenty-five leagues, encumbered with baggage. Their diet was maize, cocoa, and water.

The Brazil slaves were most robust, and easily carried 180 lb. burdens on their heads. Their diet was rice, fruit, bread, and roots.

The Congo slaves were remarkably athletic, about the finest-looking men in the world. Their diet was vegetarian.

At Smyrna the porters carried loads of 400 to 800 lb. The water-carriers at Constantinople, according to Sir W. Fairbairn, were physically the finest men in Europe. Their diet was chiefly bread, with cucumber, cherries, figs, dates, or other fruit, and now and then a little fish.

Food of Whalers.—The crews of the whalers now live on shore with the Eskimo, using the same food—seal, walrus, whale meat, venison, bear, sea-birds, and fish. Salt meat is ruled out, as it produces scurvy. The mortality, with fresh food instead of salt, is now small.

"The Eskimos are a complete contrast to the riotous crews of the whaling vessels, who are the scum of the seafaring world." They are teachable and without vice.[19]

Vegetarians by choice.—Besides the communities and classes mentioned in this chapter, there remains

the small body of vegetarians by choice, which lives frugally in the midst of the beast-eating multitude, in England, Germany, and the United States. I have no means of arriving at an estimate of their health or efficiency, compared with the average, but believe it to be high.

Many, perhaps the majority of, vegetarians in England and in the United States have made the change owing to ill-health, so that the immunity from serious maladies which they commonly maintain is the more noteworthy. Many, however, go to excess in the use of tea, coffee, etc., and this accounts for a proportion of nervous illness probably not very much less than that of the general population. Gout, rheumatism, and indigestion seem to be less frequent among them, and they are less subject to depression of spirits. There is a common testimony to the increased sense of enjoyment, and increased capacity for work.

Great is the perversion of manners in man, ingeminates Gassendi, — "he appears to have put on another disposition. Hence the whole care and concern of philosophy and moral instruction seem to consist in leading him back into those paths which he has forsaken."

CHAPTER VIII

Personal Experiences and Observations

In the following pages I have gathered from a great number of sources—in history, in memoirs, and in contemporary writings,—evidence in relation to the kinds of diet which seem, by practical experience, to be best fitted for a full and vigorous life. A state of apparent robustness may be sustained for some time on rich aliments not appropriate to the constitution, but these will not conduce to efficiency through any long period, and will surely give rise to numerous disorders. I have not, therefore, thought it necessary to enter into many details respecting the ordinary excessive dietaries of rich communities, for they are open to daily observation, and their effects, too, are very easily ascertained.

The good reputation of either a simple or a non-flesh diet appears to have come down from very early times, and naturally the first accounts we have of "total abstainers" are derived from the East. I find in Ritson's book that the Chaldean Magi lived on herbs, that the laws of Draco and Triptolemus, "the most ancient legislators of the Athenians," enjoined them to "honour their parents and kill neither man nor beast," and that the "great Aurungzebe" never tasted flesh, fish, or strong liquors, and lived to near a hundred.

And in reading some of the volumes of Josephus, translated by Whiston, I came upon the following passage :[1]—

" Now Daniel and his kinsmen had resolved to use a severe diet, and to abstain from those kinds of food which came from the king's table, and entirely to forbear to eat of all living creatures "; and they expressed to the official their desire to have " pulse and dates for their food, and anything else besides the flesh of living creatures," for " that their inclinations were to that sort of food, and that they despised the other." The officer feared that they would be discovered by the king from " their meagre bodies and the alteration of their countenances." They, however, persuaded Arioch to make an experiment with them for ten days, and to continue the fare if it were successful. " Now, when it appeared that they were so far from becoming worse by the use of this food, that they grew plumper and fuller in body than the rest, insomuch that he thought those who fed on what came from the king's table seemed less plump and full, while those that were with Daniel looked as if they had lived in plenty," he allowed them to continue on their frugal diet, and " they had their souls in some measure more pure, and less burdened, and so fitter for learning, and had their bodies in better tune for hard labour."

It is curious that a tradition of successful " simpler life " should have reached us from amidst the luxurious extravagances of ancient Babylon. If Danielites had been numerous in that empire, its fall might have been long deferred. Very different from the Babylonian were the habits of Cyrus the Conqueror.

Cæsar at forty-three was in the fullest vigour of

mind and body. His abstemious habits had left his health unshaken. No common soldier was more careless of hardships. He much admired his foes, the Nervii, who were water-drinkers, and forbade wine to be brought among them, as injurious to their sinews and their courage. "Esse homines feros magnaeque virtutis." "Nihil peti vini reliquarumque rerum ad luxuriam pertinentium inferri, quod iis rebus relanguescere animas eorum et remitti virtutem existimarent." [2]

"His own private habits and the habits of his household were models of frugality. He made an effort to check the luxury which was eating into the Roman character." "He was a great bather, and scrupulously clean in all his habits, abstemious in his food, and careless in what it consisted, rarely or never touching wine, and rating sobriety as the highest of qualities when describing any new people. He was an athlete in early life, admirable in all manly exercises."

Pythagoras said: "Nor is it meet for you to have no care for the health of the body, but to make to yourself a moderation in drink, and food, and exercise," . . . "and accustom yourself to have a diet simple and non-luxurious."

Porphyrises, of the third century after Christ, wrote that the eating of much flesh fills with a multitude of evil diseases.

Pliny wrote as follows:—"Let us candidly confess our guilt, we who are not contented even with the poisons as nature has produced them; for by far the greater portion of them, in fact, are artificially prepared by the human hand." [3] Diogenes, Cicero, Plato, and Plutarch have already been mentioned as apparently

opposed to a carnivorous diet. Zeno the Stoic, Menedemus, and many other ancient writers, are mentioned, who were vegetarian. Seneca wrote: "There is no need for prying into all the depths of the sea, for loading one's stomach with heaps of slaughtered animals . . .; may the divinities bring ruin upon them whose luxury transcends the bounds of an empire which is perilously wide." He is said to have lived with pleasure on less than sixpence a day.

No doubt some must have been impressed by the strength of the "hordearii," gladiators who throve on barley bread. Figs, nuts, soft cheese, and bread were their fare for some time.[4]

Later the athletes ate flesh, and Celsus affirmed that "the bodies which are filled in the manner of the athletæ—that is, with much animal food—become the most quickly old and diseased." Similarly, the modern flesh-eating Patagonians rarely attain seventy years of age, according to Graham.[5]

"It seems," wrote Lord Bacon in his *Treatise on Life and Death*, "to be approved by experience that a spare, and almost a Pythagorean, diet, such as is prescribed by the strictest monastic life, or practised by hermits, is most favourable to long life." He might well have added "and to strong life."

Pythagoras is represented by Ovid as arguing thus—

> "O mortals, from your fellows' blood abstain,
> Nor taint your bodies with a food profane!
> While corn and pulse by Nature are bestowed,
> And planted orchards bend their willing load;
> While laboured gardens wholesome herbs produce,
> And teeming vines afford their generous juice;

Nor tardier fruits of cruder kind are lost,
But tamed with fire, or mellowed by the frost;
While kine to pails distended udders bring,
And bees their honey redolent of spring;
While Earth not only can your needs supply,
But, lavish of her store, provides for luxury,—
A guiltless feast administers with ease,
And without blood is prodigal to please."

And much more to the same effect.

Theophrastus, the disciple of Plato and Aristotle, who died at 107, said that "eating much and feeding upon flesh makes the mind more dull, and drives it to the extreme of madness."

Sir Isaac Newton, while writing his work on *Optics*, ate little but bread, wine, and water (Voltaire).

Descartes preferred fruit and vegetables to flesh.

A recent work by Ernst von Dobschütz[6] deals elaborately with the subject of vegetarianism in the early Christian Church.

Many of the bishops and leaders of the people, and several religious bodies, ate no flesh and drank no wine. The same rule is said to hold good still among both East and West Syrians, Nestorians, and Jacobites.

Porphyry wrote: "The use of flesh does not contribute to health, but rather prevents it."[7]

Swedenborg: Eating the flesh of animals, considered in itself, is something profane.

Montaigne: "For my own part, I cannot without grief see so much as an innocent beast pursued and killed that has no defence, and from which we have received no offence at all. The stag, seeing no other remedy, implores mercy by his tears." ["To the which place a poor sequestered stag, that from the hunter's

aim had ta'en a hurt, did come to languish, . . . and the big round tears coursed one another down his innocent nose," augmenting the swift brook by which he stood.—*Shakespeare.*] "Considering that one and the same Master has lodged us together for His service, and that they, as well as we, are of His family, theology has some reason to enjoin us some affection and regard to them."

Shelley: Comparative anatomy teaches us that man resembles frugivorous, and not carnivorous, animals. He has neither claws nor pointed teeth. "A Mandarin of the first class, with nails two inches long, would probably find them alone insufficient to hold even a hare."

"Man and the animals whom he has infected with his society or depraved by his dominion are alone diseased." The domestic hog, sheep, cow, dog, are subject to "an incredible variety of distempers." [8]

Shelley's horror of causing suffering to any form of life made him a vegetarian: his argument being that man's evil passions, as well as "the germs of misery, death, disease, and crime," largely resulted from his unnatural food.[9]

Shelley was an example of reckless simplicity and extravagant frugality in his treatment of that ill-used body, which had for its inmate a soul hungering and thirsting for perfection. The Shelleys adopted a fleshless diet in 1812. He learnt more of the vegetarian doctrine from Mr. Newton, author of *The Return to Nature*, who himself had been converted by Dr. Lambe of Warwick. "Since 1809 the household in Chester Street, consisting of Mr. and Mrs. Newton, a nurse, and four young children, had strictly

adhered to the vegetable regimen. Mr. Newton's delicate health had been to a great degree restored. . . . The children," said Shelley, "are the most beautiful and healthy creatures it is possible to conceive; the girls perfect models for a sculptor; their dispositions also are the most gentle and conciliating." Later, Shelley wrote: "I continue vegetable. . . . My health is much improved by it. . . ."[10] This is rather remarkable, for not only were Mr. and Mrs. Shelley foolish in their choice of articles of food, but what they had was badly cooked, and meals were irregular. In 1817 he seems to have been active and strong, better than before his conversion to the natural diet. He often walked over thirty miles. But probably his way of living was altogether too haphazard to give him a chance of robust health for any length of time.

Moltke, when asked, in his ninetieth year, how he maintained his health and activity, answered: "By great moderation in all things, and by regular outdoor exercise."

Sir James Sawyer advised exercise before breakfast, little meat, plenty of fat [or oil or butter], no intoxicants, life in the country if possible, care for pure drinking-water, and against damp and drains; eight hours' sleep with open window, a bath at body temperature, frequent and short holidays, and good temper.

Lord Hannen, the eminent judge, was a vegetarian. He stated at a lecture by Sir B. Richardson that since he had adopted the reformed diet he had been "not only a healthier but a happier man."[8]

Dean Farrar looked "with the greatest possible interest upon the experiment of the food reformers,"

and thought that their system was destined to spread. "They are doing a very great public service."[8]

Cobden unconsciously bore testimony to the staying powers of vegetarians when he said that, of the 658 members of the House of Commons, Colonel Thompson was the best able to endure its fatigues, and Mr. Brotherton came next. These two members were both teetotallers and vegetarians.[11]

Cardinal Manning, himself very abstemious, in his Lenten Pastoral for 1876, urged that the highest physical and mental force may be sustained without flesh meat, as some of the most robust and powerful races testify.[8]

Horace Greeley, the powerful editor of the *New York Tribune*, said in his autobiography: "I judge that a strict vegetarian will live ten years longer than a habitual flesh-eater, while suffering in the average less than half so much sickness as the carnivorous must. . . . All public danger lies in a direction opposite to that of vegetarianism.[8]

Garibaldi, at fifty-three, remarks Captain Forbes,[12] "looked as young as any of them, and was by far the most active man in the army, solely, I believe, owing to his frugal habits—bread and water, fruit and smoke forming his staple diet." In England he breakfasted at 6 a.m. on bread, cheese, figs, and grapes.

Dr. Severin Wielobycki, vegetarian and total abstainer, was born on January 1793. He fought thirty-six battles on behalf of the independence of Poland. Exiled from his native land, he settled in Edinburgh, where he took degrees in surgery and medicine. Two years before his death, when nearly a hundred years old, he walked to the top of Primrose Hill (London) every morning before six o'clock. On

his hundredth birthday, 1893, at a reception in London, he laid down three rules for health and long life—

1. Abstinence from intoxicants, which harm the brain, nervous system, and liver.
2. Abstinence from tobacco.
3. Abstinence from flesh meat.

Sir Richard Phillips, High Sheriff of Middlesex, from accidentally seeing the barbarities of a London slaughter-house at twelve years old, became an abstainer from flesh. In the *Medical Journal* for July 27, 1811, he gave sixteen reasons for his belief in humane dietetics. One was the high ground of the right of sensitive beings to live, and the moral wrong of slaughtering them, when man can live in perfect health on other natural products. Another was the horror and repugnance felt by man to killing and devouring sentient creatures. Another, the personal satisfaction following abstinence from flesh for thirty years, without a day's serious illness, and with strength and vigour equal or superior to that of other men. Another, that man, for his perverted appetite, inflicts most horrible cruelties upon animals, "bleeding, skinning, roasting, and boiling them alive." Another, that few men or women could devour the animal they might be obliged themselves to kill. Another, that unless disguised and flavoured by the processes of the kitchen, the human stomach would be averse from receiving the remains of animals. Another, that England and Wales, with their 47,000,000 acres, would maintain as many inhabitants living on grain, fruits, and vegetables.

Mr. George Dornbusch wrote in 1871: "I find in pure air, pure water, pure food, personal cleanliness, and daily bathing, all that nature requires for perfect,

uninterrupted health." For about twenty-eight years he had abstained from all animal products, including milk, eggs, etc.; also from tea, coffee, and intoxicants, and bore witness to the perfect healthiness of this frugal life.[8]

Benjamin Franklin obtained a situation at a printing office in London; here he was nicknamed "Water American," for "whilst other men drank five or six pints of beer during the day, he took nothing but water, yet he was able to carry in one hand cases of type which they could hardly manage with two."

Franklin and many others have found a non-flesh diet favourable to clear ideas and rapidity of thought. His fare was chiefly potatoes, rice, hasty pudding, raisins, and water.

He "set to work to persuade his companions to take a breakfast of porridge, and gradually gained many converts." He was a great swimmer, and on one occasion swam a distance of four miles on the river. For some years he lived chiefly on coarse meal and water, or bread and milk. He was exceedingly strong; rose at 5 a.m., worked at the printing office from 8 to 6, and spent the evening in study or conversation. After a life of extraordinary mental and bodily activity, he died at the age of eighty-four.[13]

Maurice Maeterlinck writes: "Man, in relation to matter, is still in the experimental, groping stage of his earliest days. . . . It was only yesterday that he learnt that he had probably erred in the choice of his nourishment; that he must reduce by two-thirds the quantity of nitrogen he absorbs, and largely increase the volume of hydrocarbons; that a little fruit, or milk, a few vegetables, farinaceous

substances, . . . are amply sufficient to maintain the ardour of the finest and mightiest life. . . . For in truth all our justice, morality, all our thoughts and feelings, derive from three or four primordial necessities, whereof the principal one is food."

Were the belief in our well-being without animal food to become general, a great economic and moral improvement would ensue. One result would be the abandonment of the degradation wrought by alcohol.[14]

In 1747, John Wesley wrote to the Bishop of London: "Thanks be to God, since the time I gave up the use of flesh meat and wine, I have been delivered from all physical ills."

The famous Dr. Abernethy said: "I tell you honestly what is the cause of the complicated madness of the human race. It is their gormandising and stimulating the digestive organs to excess, and thereby producing nervous disorders and irritations."

Dr. Norman Kerr, speaking of the number of relapses and absolute failures in relation to excessive drink, said: "Injudicious and unwholesome diet contributes to predispose the system to inebriety."[15]

St. Pierre, in his *Studies of Nature*, observed: "Under an improved system of education, children will be brought up to a vegetable regimen, as being the most natural to man, and seeing that its influence is so considerable and so happy."

Haller, "a first-rate botanist, an eminent physician, and a profound philosopher," wrote:[16] "This food, which I have described, and in which flesh has no part, is salutary, insomuch that it fully nourishes a man, protracts life to an advanced period," and prevents or cures various disorders.

" Wordsworth was, if not a vegetarian, abstinent and simple in his ways."

Louis Cornaro changed all his habits at forty, and lived on 12 oz. of food a day, and his health became so perfect that for half a century thereafter he was never ill. When past ninety, in deference to his friends, he increased his food to 14 oz., with bad results, and he then further diminished his allowance. At ninety-five he described his life as one of great serenity and enjoyment. He wrote plays, he assisted in public works in Venice. " I find myself," he wrote, " as healthy, merry, and happy as if I were but twenty-five." All his faculties were in excellent condition. He wrote seven or eight hours a day, walked, sang, and played delightfully, up to the age of a hundred.[17]

Count Tolstoi's diet consists of bread, porridge, vegetables, and fruit. For many years he has not eaten flesh, eggs, butter, or lard, and has used neither wine nor tobacco. He is wonderfully vigorous, mentally and bodily, for his age, seventy-four.

In the *New Review* for 1892, he wrote: " The vegetarian movement ought to fill with gladness the souls of all those who have at heart the realisation of God's kingdom upon earth." [18]

Mr. Joseph Livesey, the great temperance worker, one of " the seven men of Preston," wrote,[19] on 3rd July 1874: " I have shown many a time that there is more real food in a pennyworth of bread than in a gallon of ale, and I have no hesitation in affirming that there is more real nutriment in a pound of bread than in a pound of flesh." " I have abstained from ' the dead cow ' for twelve months at once "; . . . " the result has always been satisfactory."

The Rev. Charles H. Spurgeon, the great preacher and worker, who had been a sufferer from gout, spoke as follows[20] in September 1885:—"For the last seven or eight months . . . I have lived on purely vegetable food, and I am a hundred per cent. better man for it. . . . The fact that I am alive myself, and that I enjoy life, and that I am in respectable health and strength, and a great deal stronger than I remember ever having been before, and a great deal lighter and more vigorous, and more full of mental energy than I was, convinces me that if one man can live so, other people can live so."

Mrs. Mona Caird described how excellently her son throve on a diet of lentils, haricots, hominy, rice, oatmeal, and especially potatoes, and milk, butter, and eggs, He never tasted fish, flesh, or fowl. "He began life a puny, weakly child, who I never thought would live, and to-day, at eight years old, he is a strong, healthy boy, with extraordinary vitality, and absolutely without the knowledge of what illness is."

Lady Augustus Paget, in 1893, stated, in answer to inquiries: "Since I have adopted the vegetable diet, I have experienced a delightful sense of repose and freedom—a kind of superior elevation above things material, and an ability to resist fatigue. . . . It destroys the taste for intoxicants."

Mr. and Mrs. Bramwell Booth are vegetarians. Mrs. Booth said, in 1894, that her family and household have fallen in willingly with the new arrangements. There is less monotony and better economy.

General Booth, in his *Doctrines and Discipline of the Salvation Army*, enjoins his people as follows:

"Eat moderately. . . . Thousands die from eating too much. One, or, anyway, two substantial meals per day are sufficient, with an additional light repast, for any person in health." And in the *Orders and Regulations*, "It is a great delusion to suppose that flesh-meat of any kind is essential to health." . . . "The use of flesh-meat may be abandoned at any time without loss in either health or strength; there may be some little inconvenience felt for the first two or three weeks, but it will be very trifling, and the benefits which follow, in the way of economy, comfort, health, spirits, and ability to do mental work, will be most gratifying to all who persevere with the change." "A pound of as good, nourishing, and strengthening vegetable food can be obtained for twopence as in animal food will cost a shilling."

Major Cooke, the leader of the slum work in Manchester, said, in 1890, that he had never known a vegetarian who was at the same time a drunkard. The Army's work would be largely unnecessary if a non-flesh diet were adopted in the slums.

Mr. John Macgregor (the famous "Rob Roy") in his *Cruise on the Baltic*, 1872, described the sufferings of the oxen on board ship. "Oh, the roast beef of Old England! . . . the wrenchings of horns and screwing of tails, . . . the hot, thirsty days and cold, hungry nights, . . . the filth, the odour, the feverish bellowing. . . . Who can sum up these for one poor bullock's miseries?" If he lies down, after two days and two nights of balancings on sloppy, slippery boards, he is trampled under the others' hoofs and squeezed by their huge bodies, and suffocated by the pressure and foulness. "Morning comes, and the dead must be taken

from the living." Then the horrible, mangled carcases are hauled up. "Another, and another, and twenty-two are thus hauled up and cast into the sea, and this, too, on the first day of a very calm passage. What in a storm? Oh, the roast beef of Old England!"[8]

Burton, in his *Anatomy of Melancholy*, writes as follows:[21]—

"Crato adviseth his patient to eat but twice a day, and that at his set meals, . . . and to put seven hours' difference between dinner and supper. Which rule, if we did observe in our colleges, it would be much better for our healths, but custom, that tyrant, so prevails, that, contrary to all good order and rules of physic, we scarce admit of five." . . . "Moreover, that which he doth eat must be well chewed, and not hastily gobbled, and by all means to eat no more than he can well digest." Lessius the Jesuit holds 16 oz. at most a fit proportion for a whole day for sedentary people. "A great inconvenience comes by variety of dishes.". . . "To preserve thine honour, health, and to avoid therefore all those inflations, torments, obstructions, crudities, and diseases that come by a full diet, the best way is to feed sparingly of one or two dishes at most, . . . to choose one of many and feed on that alone."

Mr. Robert Collyer said, "One great reason why I never had a really sick day in my life was that as a boy I lived on oatmeal and milk and brown bread, potatoes and a bit of meat when I could get it; and then oatmeal again."

Mr. F. W. Newman joined the Vegetarian Society in 1868, at sixty-three. After a life of great intellectual activity, he died in 1897, at the age of ninety-two.[22]

Roger Crab, who died on 11th September 1680, lived for 3s. 3d. a year on broth and bran, with chopped turnip leaves, and drank only water. He had fought and was wounded in the Cromwellian army.

A lady who died in Skye in 1880, at the age of one hundred and seven, had lived all her life on oatmeal porridge, and had not used either tea or whisky.[23]

John Evelyn wrote: Scaliger says, "Whole nations, flesh-devourers, such as the farthest northern, becoming heavy, dull, unactive and much more stupid than the southern; and such as feed on plants are more acute, subtil, and of deeper penetration." And he further argues from the short lives of most carnivorous animals compared with others.

"John Berovicius, a learned physician, treating of the extreme age which those in America usually arrive at, asserts in behalf of crude and natural herbs."

"When once old Parr changed his simple, homely diet to that of the court and Arundel House, he quickly dropt away."[24]

Thoreau wrote: "I learned this at least: that if one advances confidently in the direction of his dreams, and endeavours to live the life which he has imagined, he will meet with a success unimaginable in common hours. He will put some things behind, will face an invisible boundary; new, universal, and more liberal laws will begin to establish themselves within and around him, or the old laws be expanded and interpreted in his favour in a more liberal sense. In proportion as he simplifies his life, the laws of the universe will appear less complex, and solitude will not be solitude, nor poverty poverty, nor weakness weakness."

John Howard, the philanthropist, "was very abstemious, lived chiefly upon vegetables, ate little animal food, and drank no wine or spirits."

"For many years before his death he was a total abstainer and vegetarian. In his London house, he says, there were not a dozen joints in seven years. Water and the plainest vegetables sufficed him. Milk, tea, butter, and fruit were his luxuries."

He travelled 42,033 miles in visiting prisons, besides undergoing great hardships in his journeys for the investigation of the plague.[25]

R. L. Stevenson wrote: "The paraphernalia of murder, the preparatory brutalities of his [the European's] existence, are all hid away; an extreme sensibility reigns upon the surface, and ladies will faint at the recital of one tithe of what they daily expect of their butchers."

"We consume the carcases of creatures of like appetites, passions, and organs with our own; we feed on babes, though not our own, and fill the slaughter-houses daily with screams of pain and fear."[26]

Dr. Eduard Reich, in his work on the Development of Religion,[27] writes: "No one can rise to the higher developments of the soul who does not regulate his life in accordance with the strictest hygienic rules and correct educational principles." By means of these we are led to the practice of care for others and self-mastery. "Among the first factors in the practice of such religion stands a well-regulated diet."

"Vegetarianism . . . is infinitely more than a question of diet." . . . "We allude to that higher vegetarianism which has true morality and religion for its source, which embraces the whole rule of life,

and which, with its lofty goal, establishes the health of body and soul."

According to Clement of Alexandria, the use of fish, flesh, and fowl was forbidden to the priests of the ancient Egyptians. And one of Buddha's five chief commandments was: "Kill not—for pity's sake," and another, "Shun drugs and drinks, which work the wits' abuse; clear minds, clean bodies, need no Soma juice." Dr. Reich's own experience during twenty years of the fleshless fare, has been entirely favourable, both physically and mentally.

The Vicar of Gainsborough describes the slaughter-houses in his parish as a dreadful source of corruption to children and women, who watch and gloat over the horrible sights of butchery.

Words would fail to give any idea of "the interminable melancholy" of the Chicago slaughter-houses, where hundreds of thousands of oxen and pigs are yearly killed. The cruelty and pain are less for each creature than in the private yard, but the sum of horror and suffering, the scale of the butchery, are appalling. One cannot help thinking, in Scripture language, that for all these things God will bring us into judgment, in disease, in loss of the joy of life, in moral abasement.

Richard Wagner was influenced in the whole course of his intellectual life by a perusal of Glëizé's *Thalysia, ou la nouvelle Existence.* In 1850 he wrote:[28] "On the one hand, lack of wholesome nourishment, on the other, excess of wanton enjoyment, and, above all, a general mode of life entirely foreign to our nature, have reduced us to a state of degeneration which can only be checked by a complete renovation of the

crippled organism." Much later he adopted to its full extent the doctrine that the regeneration of mankind can only take place by abstinence from flesh-food and alcohol. Plant, in the place of animal food, he regarded as "the key-stone of regeneration." "It was the result of a profound metaphysical insight," he wrote, "when the Brahmin pointed to the manifold appearances of the animate world, and said, 'This is thyself'; these woke in me the consciousness that in sacrificing one of our fellow-creatures we mangled and devoured ourselves." . . . In truth, we have developed a "heartless blindness to things that lay before our oldest ancestors in all their naked horror."

He believed the Lord's Supper to have been established to substitute bread for flesh, and wine for blood.

"That we have not the courage to set our only motive, that of pity, in the forefront of our appeals and admonitions to the people, is the curse of our civilisation, the attestation of the dis-God-ing of our established church-religions."

Elsewhere he wrote: "When first it dawned on human wisdom that the same thing breathed in animals as in mankind, it appeared too late to avert the curse which, ranging ourselves with the beasts of prey, we seemed to have called down upon us through the taste for animal food—disease and misery of every kind, to which we did not see mere vegetable-eating men exposed. The insight thus obtained led further to the consciousness of a deep-seated guilt in our earthly being; it moved those fully seized therewith to turn aside from all that stirs the passions through free-willed poverty and total abstinence from animal food."

"Our conclusion should be couched as follows:—

Human dignity only begins to assert itself at the point where man is distinguishable from the beast by the pity for it."

Speculators bought up the rice harvest in India. Three millions of Hindus were swept away by famine, yet not one of these starving wretches could be moved to slay and eat his household animals: only after their masters did they famish too.

"It perhaps may be no less profitable to pursue in thought the acts of such a union, starting from the religious conviction that the degeneration of the human race has been brought about by its departure from its natural food, *the only basis of a possible regeneration*. . . . The example of physical health displayed by the larger half of mankind that has stayed true to the natural diet, might fitly teach us the path to strike for regeneration of the depraved but ruling portion." [29]

Michael Angelo, hardly less strong than great, attributed his power of studying for unusually long hours to his singular temperance. A little bread and wine was all he required for the chief part of the day. Very frequently he rose in the middle of the night to resume his labours. He excelled as painter, poet, architect, and sculptor.[30]

Dr. Clouston of Edinburgh, speaking of neurotic children, said: "I have seen a change of diet to milk, fish, and farinaceous foods produce a marked improvement in regard to the nervous irritability of such children. And in regard to such children I must thoroughly agree with Dr. Keith, who in Edinburgh for many years preached an anti-flesh crusade in the bringing up of all children to the age of eight or ten years." A medical writer in the *Boston Medical and*

Surgical Journal agrees with this opinion. He says: "I have become convinced that children fed largely on meat have a capricious appetite, and suffer from indigestion, constipation, and diarrhœa; are subject to catarrhs of the mucous membranes, and have an unstable nervous system and less resistive power in general." These are more liable, he says, to colds. Dr. Cammann of New York wrote in 1884 ("Milk Diet in Childhood"), that in a large institution there, meat had been omitted from the dietary of children under eight years of age with good results.[31]

Cullen observed, says the *British Medical Journal*, that gout seldom attacks persons who live much on a vegetable diet. "Not only do we find that the sufferers we meet with have generally for years previously been on a liberal allowance of animal food, and have frequently partaken freely of ale or wine, but we know that in Scotland, where less animal food is taken, and where the national beverage contains almost no acid, gout is comparatively rare."

"A vegetarian diet will diminish the formation of uric acid, will directly introduce less uric acid or xanthine compounds, and, lastly, its salts will increase the alkalinity of the blood, so that all urates will be held easily in solution and freely excreted. Here then is a pretty complete explanation of Cullen's observation."

After showing the importance of vegetarian diet in many cases of kidney disease, the article concludes: "For this reason soups made from meat, beef-tea, and meat extracts, which contain the maximum of excretion products with the minimum of nutritive matters, should be entirely avoided, while a milk and vegetarian diet, even if it does not bring about complete repair, will do less

than any other diet to increase the kidney lesion ; and, as regards the blood, will do more than any other diet to keep it free from uric acid and other toxic products of nitrogenous metabolism." [32]

Dr. Karl Oppel, a distinguished schoolmaster of Frankfort, who died in 1903, wrote in one of his books: "As I was acquainted with many vegetarians, who were models of good health, and who had developed a remarkable power for mental work, I considered it my duty to read the literature of vegetarianism and inform myself about its principles. . . . When I went over to a purely vegetable diet I was sixty-six years of age (in 1882). The new mode of living has not caused me the slightest inconvenience. The much-honoured Viennese anatomist, Professor Hyrtl, said after becoming a vegetarian that he could think more clearly and calmly, that he felt gladder and fresher, and could work better than in the days of his youth. I can bear testimony to exactly the same experience. . . . Work is a pleasure to me ; neither walking nor mountaineering tire me unduly." [33]

Moltke, the great general, when asked, in his ninetieth year, how he maintained his health and activity, answered, "By great moderation in all things, and by regular outdoor exercise."

Mr. Eustace Miles adduces the following testimony:— Dr. Alcott maintains that as long as the use of animal diet remains, all our efforts to eradicate diseases must be of no avail.

Mr. Blackwood, the chemist, demonstrated that vegetables contain all that is necessary for man's life and strength.

Dr. Andrew Combe stated that dyspeptic and

nervous maladies are generally "the slow and gradual results of months or years of previous anxiety, or neglect of dietetic rules and exercise."

Humboldt calculated that land growing wheat supports ten times as many persons as pasture; land growing bananas supports two hundred and fifty times as many.

Dr. James Johnson, M.D., F.R.S., editor of *The Medical Chirurgical Review*, advised that meals should be taken at regular periods of six hours three times a day, should be thoroughly masticated, and very moderate in amount. Drink, which should not contain fermentable substances, should be taken *four hours* after a meal.

Dr. Korke, a teacher in Syra, affirmed that in no country could he find pupils to compare with his, whose diet was entirely vegetarian.

Following a "symposium" of old men on how they preserved their health, the *Grand Magazine* concludes: "With a single exception, the men have been all their lives exceedingly moderate, not to say abstemious, as regards both food and alcohol." Most of them had not used tobacco.[34]

At the Albany Orphan Asylum, says Mr. Miles, after experience of the usual fare, and after three years during which there were between thirty and forty deaths, and from four to six children continually on the sick list, the new system was tested, in which flesh and soups were wholly banished. Then the infirmary was entirely vacated. In the twelve succeeding months there were three deaths, but of new inmates. "Since the new regime had been fully adopted, there has been a remarkable increase of health, strength, activity,

vivacity, cheerfulness, and contentment among the children. The change of temper is very great. They have become less turbulent, irritable, peevish, and discontented." One of the superintendents adds, "There has been a great increase in their mental activity and power," etc.

Referring to foreign countries, numerous instances of uncommon strength are adduced.

"Few people," wrote Lieutenant C. R. Low, "surpass the Arabs in longevity, agility, and power of endurance." They subsist on dates and milk, and little else. Other examples, such as the people of Cyprus, are mentioned, but I have already quoted plenty of evidence of this kind.

The following counsel is given on the whole subject:—

"If there is a law of variety at meals, it is 'different things at different meals,' not 'different things at the same meal.'"

As a rule, fruits and vegetables ought not to be eaten at the same meal.

The condiments, pepper, etc., are not to be used by those who wish to live on an unirritating diet.

The simpler foods include milk, fruits (such as oranges and apples), vegetables, grains (such as wheat and oats), nuts, water, cheese, Hovis bread [and flour], and "protene."

Good health is "an active tendency towards whatever is good, the tendency to develop, as God meant man to develop, in every direction, both physical, mental, and moral."

Fatigue, according to Dr. Haig, arises because the person at the time cannot produce enough energy or force, and is partly caused by a deficiency of proteids.

Either the body has not had enough proteids put into it, or the proteids have not been digested, or the blood is too much clogged to bring the proteids to the right place. The blood may be clogged by waste products.

The main causes of bad health, in relation to diet, are, according to Mr. Miles—(1) eating at the wrong time, *e.g.* just before or after hard work of any kind; (2) food wrongly prepared; (3) food wrongly mixed; (4) failure to masticate sufficiently; (5) excess; (6) deficiency of proteid; (7) harmful ingredients, such as stimulants or sedatives.

"The amount of stimulant that mothers unwittingly give to children is simply appalling." "Tea, for instance, produces on the blood, the heart, the nerves, the digestive organs, the food itself, and the kidneys, certain effects which are absolutely unknown and unbelieved in by the person who only thinks of the satisfactory effects of the immediate present."

As to the foods and way of living recommended, Mr. Miles has not yet heard of any case where a really fair and scientific trial has proved a failure.

With this system, in which abstinence from flesh foods, tea, etc. was an important part, Mr. Miles found his ailments disappearing, his liking for alcohol departing ("a thing I had never imagined to be possible"); clearness of eye, skill, endurance, activity, flexibility, brain-work, memory, increasing much. Expenses have much diminished, much time has been saved, longer hours have been given to work, games have "improved wonderfully," sleep improved; liver attacks, colds, etc., have become rare; fatigue, depression, etc., were found to be owing to errors of food. "It is far less tiring for

me to do twelve hours a day of the most severe brain-work while eating the proper kinds and amount of fleshless foods, than to do two hours a day while eating flesh with my meals."

"Increasingly better motives spring out of increasingly better health."

He recommends, in general and briefly, early rising, open windows, a protene biscuit and an apple or two early; a short walk before breakfast, bath, two or three protene biscuits; and after an hour, milk and soda; work; Hovis bread and cheese or protene for lunch; early dinner, very slow mastication; early retirement to bed—two or three hours after the last meal.

Very hot or cold foods, fast eating, drinking within half an hour before or two hours after a meal, alcohol, smoking, drugs, flesh-foods, tea, coffee, cocoa, sauces, savouries, and irritants should be avoided.[35]

The Rev. J. C. Street said at a meeting in 1902 that his fifteen years of vegetarianism had been a record of brightness and strength to him, which he would not forego for anything he could think of.[36]

Mr. Ernest Clark spoke as a life vegetarian of the third generation, and said that all his children were also life vegetarians. He had a feeling of horror at the mere idea of eating flesh, and was convinced that life was happier for those who had no concern in the slaughter of animals.

The Rev. James Clark found in America several religious bodies who are vegetarian—the Theosophists, Seventh Day Adventists, and Doukhobors. The Parsees are also said to be vegetarian.[36]

Dr. Sosnowska, of Paris, in active practice since 1887, broke down from excessive work, studied the

diet question, and after adopting a vegetarian diet (fruit for three years) regained her health and vigour.[37]

Lord Heathfield, the hero of the siege of Gibraltar, during eight of the most momentous days ate only 4 oz. of rice daily, with a little weak wine and water. His diet for a long time was bread and vegetables.[38]

Mr. Jackson, a distinguished surgeon of the army, said his health had 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." "I eat no animal food, drink no wine or malt liquors, nor spirits of any kind."[38]

The Rev. J. B. Strettles, in answer to inquiries, said: "I have neither seen nor heard of any reason to doubt that in strength they (abstainers) are equal, if not superior, to those who live on flesh diet; while in health, so far as my observation and experience go, they greatly excel them." During thirty-four years of abstinence he had known of no case of injury to young or old to arise from such abstinence. This refers to the religious community with which he was connected.[38]

Sir William Temple wrote: "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."

Tryon, in *The Way to Health*, wrote: "If all men would refrain from eating of flesh, there would be no cause to complain of want of food."

Mr. Thomas Bailey, in his *Records of Longevity*, wrote: The voice of wisdom and sound philosophy in all ages and these records establish the truth, in spite

of some instances which appear to the contrary, that temperance, industry, and exercise are the three great elements of longevity. In an incomparably greater proportion than gluttons and hard drinkers, persons of sober and industrious habits have been long livers.

Many of the aged women were of the very poorest class, exposed to severe toil and privation till past middle life.

"Temperance and activity of mind and body are certainly the best preservatives of health." Many of Mr. Bailey's instances give quite untrustworthy figures of old age, but the general impression is probably correct.

The rules of Lessius, a follower of Cornaro, are as follows for perfect health :[39]—Not to eat too much for bodily or mental exertion. Not to pass hastily from one extreme of living to another. To eat plain and wholesome food. To avoid too great variety and curiously made-up dishes. To use the right proportion of food for age, temperament, strength, and occupation. Not to allow the appetite to regulate the quantity.

At a vegetarian annual meeting, the Rev. James Brighting (Denton) gave his testimony of excellent health during the eighteen months since he adopted the fleshless diet. Two meals a day suited him best. He could do a fair amount of cycling—seventy-five miles before breakfast and seventy-five after ; he could do his hard daily work better than previously, and his nerves had been wonderfully strengthened.

Dr. George Black, of Torquay, quoted the Rev. Sydney Smith's calculation that between ten and seventy he had eaten forty-four waggon-loads of food more than was necessary, had thereby starved [taken

food from] at least one hundred people, and wasted about £7000. He gave as the actual dietary of a young woman in the country the following—breakfast, fried bacon, potatoes, bread, and strong tea; for lunch, bread and cheese and ale; for dinner, cold beef, potatoes, pickles, tea, half a pound of nuts; for supper, pork, pickles, junket, and cream. The result was indigestion. "Kant, the German metaphysician, lived for thirty years on one meal a day." An old friend of Dr. Black, who was forty years in the Intelligence Department of the army, had lived twelve years on a daily meal, with a cup of coffee and milk for breakfast and supper; he had extraordinary strength, and frequently cycled fifty miles before his meal. "After careful investigation and experiment, he was convinced that a non-flesh diet would enable men and women to do better and higher work, to feel stronger, and be happier than was possible on a mixed diet." The result in his own case was a decided and delightful improvement in health." [40]

Mrs. Earle wrote in 1903: "The tea question is the greatest stumbling-block to everyone, especially women. It is a very strong nerve stimulant. . . . Anyone who will honestly give it up, gradually, if they like, by adding more hot water daily, will, I am sure, acknowledge, when they have been on hot water and milk, or milk alone, how infinitely better they are at the end of six months." "An Eton boy told me they ate meat four times a day at Eton, and drank tea twice. No wonder that as a rule schoolboys look pale and anæmic." . . . "Monkeys which once taste meat and alcohol eagerly crave for them, though disease and death are generally the result." . . . "In substituting

tea and coffee, a great injury has been done, and the poor suffer now from nervous diseases and mania which were almost unknown fifty years ago." [41]

Lord Playfair's dictum, "Animal diet is not essential to man," might fairly receive this addition, "and is not favourable to efficiency."

Edison, Tolstoi, Maeterlinck, Wagner, and many others, are examples of the capacity for mental labour which a vegetarian diet maintains. Luther and Sir Isaac Newton seem to have been inclined to it.

I may quote a few more mental workers, whose witness to its value is less known.

Franz Rockicki, a distinguished musician of Berlin, was leader of the Berlin Vegetarian Choir. He became a vegetarian twenty years before his death, owing to bad health, and derived great benefit from the change.

In a book called *From World to Cloister*, the author says: "Although at a period past middle life so entire a change of diet was a somewhat perilous experiment, it was one which experience has proved to agree wonderfully well with me; . . . so that in a few months I found myself in better health than I had enjoyed in the world." [42] The present author's experience is similar; though making the change late in life, and after many generations of ancestors had lived on rich fare, the result was entirely favourable. And in every case known to him there has been benefit; the old, if careful and scientific in their choice of materials, are no less helped by it than the young.

Mr. A. A. Voysey wrote to the *Westminster Gazette* as follows, in September 1904:—"I was a barbarian till I met Dr. Haig, and was able to see that he had constructed on incontrovertible facts an intelligible

science of diet. I have followed the truth he taught me, and now not only enjoy a far greater physical and mental fitness, but,which is more important, the revelation of the marvellous connection between the physical and moral sides of man, so that I now see in truth about diet the great power to regenerate a large section of the human race." The vegetarians "are a strong body, probably considerably above the average in health, and could far outstrip the best, if they gave up tea, coffee, and pulses, and paid a little more attention to the proteid value of foods."

Another witness, Mr. J. F. Partington, wrote,[43] after giving up flesh and heavy meals: "Although I am in what may be regarded as middle life, I feel younger and more sprightly than I did twenty years ago, both mentally and physically. That tired feeling so common at the close of each day's work is now the exception. . . . It is all a wonderful experience. . . . I thought I knew formerly what good health was, . . . but now I realise what very good health is. . . . My friends remark how well I am looking."

At a London Inebriate Home of the Salvation Army "the food provided is without stint, varied, plain, and wholesome. For nearly three years the inmates have been maintained on a vegetarian diet, and it has proved a success." "We provide an abundance of fruit," say the officers, "as well as vegetables." "The women themselves quickly learn to recognise that they are better without flesh meat." The superintendent and nurses, who were opposed to the change, are now strongly supporting it, and are themselves prospering converts. Direct information reaches me that the improvement since the adoption

of this diet is great, and that much trouble is saved. The inmates are certainly better and happier.[44]

According to Mr. Gibson Ward, rheumatism is the result of acidity of the blood ; " with alkaline blood there can be no rheumatism or gout."

" I will not enumerate the marvellous cures I have made with celery."

" Small quantities of lentils (a peck is sufficient for a small family in winter) can be purchased at most corn-dealers' in London. I am writing with a full, practical knowledge of the subject, having for thirty years lived on seeds, vegetables, and fruits, to the total exclusion of alcohol, flesh, and fish. Yet not a man in a thousand would compete with me in strength of lungs, or many men compete with me in strength of limb under equal conditions." [45]

Mr. Thomas Owen, of Oswestry, mentioned at a meeting that he owed his present vigorous health to vegetarianism. Forty years ago he was a broken-down dyspeptic, not expected to live long. Prescriptions of animal food, port wine, stout, brandy and water, and medicines only made him grow rapidly worse. He then, by reformed diet and bathing, gradually cured himself. At sixty-five, he felt so wiry and had so much energy that he often chose to run rather than walk. His meals were two, consisting mainly of brown bread, biscuits, fruit, and nuts ; he drank no tea or coffee, and never smoked. He had cycled sixty miles before breakfast, having taken nothing since 6 p.m. but a glass of water.

Mr. William Harrison, of Manchester, said the amount of work performed by Mr. Axon was marvellous. He himself knew from personal experience

how vegetarianism gave strength for work. Twenty-five years ago he was a dying man ; now, in his sixty-eighth year, he could ride eighty miles on his bicycle, and will ride fifteen miles an hour. Recently, he walked thirty-six and a half miles without a rest, upon four ounces of brown bread, three bananas, and three tomatoes.[46]

Mr. J. H. Cousins relates that he was rejected for various disorders, chiefly belonging to imperfect digestion, by an insurance corporation. A year later he became a vegetarian, and after another two years presented himself again for examination by the medical officer. He was passed, the doctor observing, "You are one of the best lives I have ever examined." He says, "I enjoy the most abundant good health ; my capacity for mental work is immeasurably increased."

Captain F. W. Crosby writes : "I have been a vegetarian since 1837. I am fourscore next birthday ; have just returned from a trip to the desert to examine a mine. Slept on the ground ; went down rickety ladders into pits a hundred feet deep ; . . . returned in perfect condition."[47]

Mr. Thomas H. Barker, more than thirty years Secretary of the United Kingdom Alliance, wrote : "I do contend—and I most earnestly believe—that those who use flesh-meat do not, and cannot, enjoy the highest physical health and vigour of which they are capable ; that, other circumstances being equal, they would be healthier, stronger, and happier without the flesh. . . . I can myself bear a testimony in favour of vegetarianism, based upon thirty years' rigid abstinence from fish, flesh, and fowl."

Councillor Joseph Malins gave very strong testi-

mony, from personal experience, in favour of vegetarianism. It had "attractiveness so far as palate and body are concerned. I must also admit that a gradual change of mind and disposition began to manifest itself." Dislike of the sight of raw flesh and the smell of dead fish was succeeded by pity for the brute creation, which suffered so terribly, and by thankfulness for not personally bringing about the sufferings of sentient beings.[47]

Dr. Adam Ferguson, of Edinburgh,[48] the historian, after strokes of paralysis, became a Pythagorean at sixty, eating nothing but vegetables, and drinking water and milk. He got rid of every paralytic symptom, became robust and muscular, and lived to ninety-three. Sir Walter Scott described him as having been, "long after his eightieth year, one of the most striking old men it was possible to look at. The mixture of original thinking with high moral feeling and extensive learning, his love of country, contempt of luxury, and especially the strong subjection of his passions and feelings to the dominion of his reason, made him perhaps the most striking example of the Stoic philosopher which could be seen in modern days."[49]

Mr. James Parrott, of South Shore, "had been [in 1896] a vegetarian for fifty years; although he has entered his ninety-fourth year, he is as active as most men of sixty."[50]

Mr. O'Connor, a non-vegetarian, observed that the people of his district in Ireland were perforce vegetarians, and throve. The only man who had afforded himself flesh diet had the gout. Professor Mayor brought forward the fact that Mr. Arnold Hills, head of the Thames Iron Works, is a vegetarian, and that

some puddlers there, who were vegetarians, were entirely free from the exhaustion from which the flesh-eating workmen suffered.[51]

The *New York Examiner* gives an account of how a formerly weakly and rheumatic boy won the *New York Journal's* prize for the best all-round physical development out of 5139 candidates. His regeneration began at seventeen, by pure food and pure water, deep breathing exercises in the open air, and abstinence from flesh, tobacco, tea, coffee, and stimulants.[52]

Mrs. Grace B. Hort died on 9th April 1904, at ninety. She never tasted fish or flesh throughout life. She was born in Yorkshire in 1814, and settled in Philadelphia in 1831.[53]

A Greek lady, who refers to the ancient training of Greeks on figs, barley, bread, and vegetable oil, describes herself as having always suffered from neuralgia or anæmia so long as she lived on the usual butcher's meat, stout, etc. After adopting the reformed diet, she had no return of these troubles, dispensed with drugs, and could walk three times as far with half the fatigue of former efforts.[54]

One of London's greatest authorities on dietary said: "Oatmeal is the richest of all cereals in nutritive properties. It is particularly rich in . . . all the essentials for building up blood, bone, and muscle."

A Scotch doctor used oatmeal himself for nearly eighty years, and his family of three stalwart sons and two daughters derived equal benefit from this diet.

The city analyst of Edinburgh considers oatmeal

one of the finest foods that can be had, for all who can digest it.[55]

An army doctor found it very satisfactory for convalescents from typhoid in the South African war.[56]

Yet, in Scotland, and "even in the Highlands, people have largely given up oatmeal for white bread and strong tea."[57]

The following is the testimony of Mr. J. Hayward, a coal-heaver, in 1903:[57]—"Whole-meal bread has been my staple food for over twenty years. I am still a coal-heaver, and find the more I cut my wants down, the better I am. I can truly say, with the poet, 'My riches consist not in wealth, but in the fewness of my wants.'" His meals consist of bread, vegetables, nuts, and cereals.

Mr. Albert Broadbent wrote, in 1903, the following notes:[58]—Of sugar, Great Britain consumes 86 lb.; the United States, 64; Denmark and Switzerland, 45; Germany, Holland, and France, about 30 per head.

According to Haig, atheroma of the blood-vessels is always associated with pressure and strain.

Vegetables should always be steamed or eaten with the water in which they were boiled.

Arrowroot, corn flour, etc., and many prepared foods are deprived of valuable qualities.

Potash salts are exceedingly useful in dissolving out rheumatic and gouty poisons.

Brantia, a strong infusion from one tablespoonful of bran per head, is very useful as being especially rich in potash and soluble phosphates.

Mr. Samuel Saunders, of Market Lavington, now eighty-eight, states that he has—for breakfast, three ounces of sharps or whole meal or Quaker oats, as

porridge, two tablespoonfuls of plasmon, the yolk of an egg; for dinner, a small plate of three vegetables, three dessertspoonfuls of brown bread crumbs, a small plate of milk or fruit pudding; for supper, a cupful of barley-water, with a dessertspoonful of carnos, six slices of thin bread and butter, two roasted apples. This costs eightpence a day. No tea, coffee, or cocoa, or condiment. He has never had a headache or any serious illness. He had taken no intoxicants for seventy-two years, no flesh or fish for sixty-two years, and never any tobacco.

Mr. Thomas, seventy-nine, and of great energy, eats largely bread and jam, about one egg daily, plain vegetables, and very weak tea.

Whole wheat is very useful in cases of anæmia. (See Bunge's *Experiments.*) "It is remarkable that wherever we find a race of men retaining primitive milling customs, or living on uncorrupted grain food, we find their teeth strong and free from decay."

Mr. Albert Carter, surgeon-dentist, related some years ago that he found the natives of the Punjab and North-West Provinces, whether Hindoo, Sikhs, Punjabees, Afghans, or Goorkas, had splendid teeth. Brahmin skulls found on the banks of the Ganges showed no case of general dental decay such as he was acquainted with at home. In Ceylon, the native Singalese had good teeth, the children of European parents had dreadfully bad teeth. In Australia, the aborigines had splendid teeth, the colonial population very bad teeth. Edwin Cox, licentiate in dental surgery, ascribes teeth degeneracy to white bread. [Hot tea, etc., frequently accompanies poor food.] With good whole-meal bread, says Mr. Broadbent,

constipation, neuralgia, and toothache decline, and the teeth are strengthened. It is a most difficult thing to get a pure whole-wheat meal. Hovis bread is next best to whole meal; it contains more proteid than ordinary bread.

There is great harm in eating fruit to excess. Two or three apples or their equivalent is quite sufficient. Excess of fruit is apt to cause acidity, nervous attacks, piles, and rheumatism. Starch with vegetables was found to occupy about a third of the time taken by starch with fruit juice in digestion.

The veterinary surgeon Simon, Director of Public Slaughter-Houses at Görlitz, Germany, speaking of a strict vegetarian on military service with him, describes him as quite equal to the severe discipline, and sustaining the long and heavy marches with far less fatigue than his comrades, whose daily rations included flesh.[63]

Herr Max Böhm, as a boy, determined not to eat animal flesh, which he disliked. His enraged father horsewhipped him for his obstinacy, but the boy declared he would be beaten to death rather than eat flesh, and in the end suceeded in his object.

Herr Weilshauser was turned from flesh-eating by the sight of a butchered calf which turned its dying eyes upon him. The same impressive appeal changed the life of an English boy, now an athletic vegetarian.

An advertisement offered light work to a youth. This turned out to include chopping off the heads of sixty geese in succession. The horror of such a business caused the "light" workman to escape by night from his employer's house.[59]

Mr. Joseph Wilson signed the pledge in 1848, and

has been a vegetarian for about fifty-three years. At the annual meeting of the Vegetarian Society in 1897 he stated that "his life had been rendered immeasurably happier by the adoption of vegetarianism," therefore he advised everyone to adopt that delightful way of making themselves healthier and their lives more enjoyable.[60]

A correspondent writes, in the course of a recent article[61] on diet for the hot weather, that an ordinary man weighing 10 st. and leading an active life can get all he wants from 1 lb. of bread, 1 oz. of cheese, 2 oz. of rice, 12 oz. of vegetables, and a quart of milk, but by trebling the amount of cheese the quantity of milk might be halved.

When flesh meat and tea and coffee are about to be discarded, the meat may at first be left out from one meal and the tea and coffee made weaker, for the sudden dropping of these is likely to produce temporary headache in those accustomed to them.

The slight depression often caused by the disuse of flesh, tea, etc., is owing, according to Dr. Haig, to the excess of uric acid in the blood, which is soon eliminated, and the depression is soon succeeded by a sense of greater fitness and alacrity.

There is far greater variety in the cereals, fruits, nuts, cheeses, etc., than in the variously dressed dishes of beef, mutton, pork, and poultry.

A traveller of last century made the following remarks on the people of some of the South Sea Islands: "I am inclined to think that the people of the Marquesas and Washington Islands excel in beauty and grandeur of form, in regularity of features and of colour, all the other South Sea Islanders. The men

are almost all tall, robust, and well made. We did not see a single cripple, nor deformed person, but such general beauty and regularity of form, that it greatly excited our astonishment. Many of them might well have been placed by the side of the most celebrated masterpieces of antiquity. . . . The food of the people consists of bread-fruit, cocoa-nuts, bananas, yams, batatas, etc., and mostly in a natural state."

Adam Smith, in his *Wealth of Nations*, mentions that the most beautiful women of the British dominions are said to be, the greater part of them, from the lower rank of the people of Ireland, who are generally fed on potatoes. The peasantry of Lancashire and Cheshire, whose fare was somewhat similar, have been likewise praised for comeliness.

Mr. Cunynghame wrote in the *Nineteenth Century* respecting diet in Persia: "It is possible to live, and to live well, on dates and maust (curdled milk). And Englishmen can do it, for I have myself." [This is the common food in Baghdad.] "One gets thin, but keeps the most excellent condition, and feels really fresher, healthier, and readier for the road than the occupant of a luxurious habitation in London. The Persians delight in roast lamb, chicken pillaus, and Shiraz wine.

The Russian needs good schi or borsch, cabbage or beetroot soup, with meat in it if possible.

I find that a British labourer in hard work spends 4d. for breakfast of coffee, a bloater, or bacon; 8d. for dinner of potatoes, cabbage, and meat; and 4d. for tea. The cost is fourteen times the Indian's fare.

My next-door neighbour in a Russian village got up at 4 a.m. and worked till 9 p.m. The peasants

round me had milk, curds, and potatoes, and a fish cake for breakfast, cabbage soup, gruel, vegetables, and sour milk; and, by no means every day, meat for dinner. Tea, bread, and cheese, and supper before bed." [62]

Mr. William Couchman related at a meeting in 1875 that after a terrible accident, by which his head was severely damaged and his scalp nearly removed, and when he had recovered consciousness, he, being a vegetarian, refused to eat the mutton chops and drink the brandy and light wine prescribed, and kept to his usual fare of brown bread, stewed apples, haricot beans, rice, and vegetables, adding eggs beaten up in milk. The doctor declined responsibility for the consequences. His blood was pure, and the wound, which was extremely serious, healed wonderfully. The doctor admitted that unless he had been in a condition much better than that of most men, the accident would have been fatal.

Archdeacon Govett of Gibraltar writes: [63] "Recent physiological science seems to be evidencing the superiority of a sound, sweet, cleanly, wholesome, and unstimulating diet of fruit and vegetables. . . . As a total abstainer of twenty-three years' experience, I am convinced that such a régime immensely diminishes the craving for alcoholics; and Inebriate Homes are now being successfully conducted on the principle."

Pastor Loughborough, of Oakland, California, writes in response to my inquiries: "My being still in active service at seventy-three is not due to a vigorous constitution by inheritance, for I was a feeble, sickly child from birth. At two I had scarlet fever, from which I never fully recovered until after adopt-

ing the proper diet. At eighteen I had a slight hæmorrhage from the lungs. By the excessive use of animal foods—pork, beef, etc.—and pepper, mustard, sharp pickles, etc., I injured myself; at thirty-one I was supposed to be in the first stage of consumption. In 1863 my attention was called more fully to the question of the right food for the health of man. Gradually I left off beef and mutton, and at once pork, tea, coffee, spices, etc. Within a year all desire for flesh food was lost. In three months my cough entirely ceased, and my lungs were strong. From 1864 I rarely used a little fish, and occasionally a very small portion of beef. From 1885 I left off entirely the use of flesh food. From 1864 onwards I have not used 5 lb. of animal food. My diet consists of grains, nuts, fruits, and the finer qualities of vegetables. Last year, during four months, I travelled 6670 miles by railway, attended 175 public meetings, in 103 of which I preached the sermon. During the last three months I have written a book of 551 pages." [64]

Mr. A. H. Frank, a well-known inventor and manufacturer in the United States, wrote from Buffalo in 1888: "At the age of fifty-eight I was what you might call a pretty well used-up man. Six years ago last August I discarded all flesh meats and animal fats, and have since that time greatly improved in health. . . . Tea and coffee I place with tobacco and alcohol drinks, and use none of them. . . . I am past sixty-four, have excellent health. . . . I can do more work, either mental or physical than on a mixed diet. . . . My principal food is fruit and bread, with no salt. I occasionally eat vegetables, which I salt a little. . . . I can live on anywhere from two to twelve

cents [say threepence] a day. . . . I did two men's hard work eating nothing but one pound of corn a day. . . . My day's work commences usually at 4.30 a.m., and ends at 5.30 p.m., after which I drive two miles and care for my horse, and often do my cooking." [65]

Mr. Henry Cunynghame, C.B., wrote as follows in 1903: "The very high value of bread and other cereals will come as a surprise to those who have not read modern works on the subject. That a pound of bread should have as much nourishing power as a pound of meat (flesh), or that a pound of dried peas should have a greater value than either, is quite against our English roast beef theories. But it explains the healthy lives led by Scottish gillies and Swiss shepherds who live on oatmeal and other grains, only varying it by cheese, which has a nutritive value half as great again as either bread or meat. The labourer is not to be pitied with his dish of beans and bacon if he can get enough of it.

"It is for this reason that good whole-meal bread is such an excellent food for old people and children, and especially for those [persons] who suffer from gout." [66]

Mr. M'Knight gives the following as suitable food for the tropics: Fish, beans, or peas for proteid; millet, manioc, yam, etc., for starch; ground-nut oil, til oil, etc., for fat.

Millet is the predominant grain of tropical Africa. Watt says that to the vast majority of the people of India, jowar and bajra are of more importance than wheat or rice. The seeds are ground into meal or flour and eaten as cakes or porridge.

Ragi is grown in Southern India, Mysore, and

Ceylon; manioc or cassava in tropical America; soy bean in China, Japan, etc., for bean cheese. For nitrogenous food it is *excellent.* Palm butter is a product of Africa.[67]

In January 1903 an account was published[68] of Mr. Horace Fletcher's discovery of the value of slow eating, small meals, and thorough mastication. The system of mastication and sipping is, according to him, a panacea for indigestion and other ailments. In his words, the experiments of Professor Chittenden, at Yale, based upon discoveries by Mr. Fletcher and his colleagues during six years, show that "the human machine" fed on "from one-third to one-half of what it has been taught to consume" maintains "more than double the ordinary strength, endurance, and general efficiency."

"It means keenness, elasticity, mental alertness, and a surplus of energy always at command, a constant tone of muscular fitness which makes it possible to indulge in unusual mental or physical exercise without fear of muscular fatigue." Mr. Stapleton, the champion wrestler of America, improved under the system from 4500 to over 8000 units of efficiency. The increase of strength of six soldiers was from about 100 to 200 per cent. In no circumstances, said the athlete to Professor Sherrington, of Liverpool, would he return to a careless and excessive diet.

For five years Mr. Fletcher has lived on one-third of the food a healthy working-man eats. At fifty-four years of age, he rides his bicycle one hundred miles a day, and does athletic training at any time. He has the patience to chew a piece of bread sixty times.[69]

The results attained by Mr. Fletcher, and the way of health which he demonstrates, are certainly well worthy of attention.

As Mr. Eustace Miles observes: "The healthy man leaves himself entirely in the hands of his cook or his restaurateur. Hence the healthy man runs serious risks of becoming an invalid. Very few escape the horrors of dyspepsia. Many become martyrs to gout, develop gastric ulcers, provoke apoplexy, or disable themselves with corpulency." The annual exodus to foreign watering-places proves how greatly we misuse food.[70]

An example of restoration to strong life by the vegetable régime is given in 1850 by a stone-mason who had suffered much from ill-health and become quite weak. After living a short time on fruits and farinacea, he wrote: "I now get on first-rate, and keep in excellent health, entirely without the use of medicine; and altogether I feel in a *blessed state of existence.* I am more buoyant in spirits, more agile; my physical energy is increased, and altogether I enjoy *a new life.*"[71]

The following observations on dietetics were contributed by Miss Florence Sexton:—

The men in Ayrshire enjoy excellent health, but the women suffer greatly from headache and stomach troubles and rheumatism. About 2 lb. of flesh meat serves four or five persons for a week. Tea is largely used, and porridge and potatoes.

Flesh foods should not be suddenly discarded; the change sometimes causes severe depression. Most people can make the change quickly without harm.

Let the person who makes a change in diet study

the composition of food stuffs. He should know, *e.g.*, that nuts are rich in proteid and fat; corn flour, potatoes, and rice in starch; beetroot in sugar; fruits and green vegetables in salts and water. He should know what substances contain uric acid or any poisonous alkaloid. Let him know how much proteid his body requires, for quiet life and for hard work. He should carefully avoid those particular articles which in his particular case are harmful.

Statements of percentage nutritive value are very misleading if used as guides without ample qualification. Whole-meal bread is given as of 55 per cent., rice of 88 per cent., and sugar of 100 per cent. nutritive value, yet whole-meal bread is the best food of these three (if properly made), rice being deficient in proteid and sugar containing none.

Food tables make beans, etc., appear far higher in proteid value than beef, but beef loses water while beans take up water in cooking.

Sugar is poisonous to many gouty people, both beef and beans are intolerable, except in small quantities, to others, and the excess of uric acid or xanthine in animal flesh, pulses, and tea and coffee piles up the material for serious diseases.

The difference of percentage of proteid (the main element of nourishment) in beans, raw and cooked, is very great, the cooked beans apparently containing less than a quarter of the amount per cent. in dry, raw beans.[72]

Mr. Perky has established a great institution at Niagara Falls for the manufacture of "natural food." Mr. Perky turned his mind to the science of food some years ago, when his health broke down, and, in his

own words, he, from the most abject physical wreck, succeeded, by the use of naturally organised food, in rebuilding his body into a perfectly healthy condition. "Take a grain of wheat and analyse it, and it is the most beautiful thing on earth under the microscope; there is nothing to equal it. The outer bran is what we call waste, and there are five bran coats. Between the two next are found the insoluble phosphates that build the teeth and bone. The miller takes that off and gives it to the hogs.

"Between the next two layers is found cerealine, a species of diastase, that, when brought between the teeth and masticated, mixed with the saliva, operates to digest the starch, and without it you cannot digest it [the starch] properly. Farther along, when you get into the centre of the grain, there it is a germ, the living principle."

"There is no crime that I know of," Mr. Perky declared, "that in my judgment equals the crime of the white-flour man, unless it is that of the man who bricks up his chimneys and compels his family to breathe over and over again the air that has been devitalised, out of which the oxygen has been burned by the stove."

This is the time people begin to grow up with poor teeth and with catarrh, and that malady is general. To be healthy and vigorous the food must contain the material that makes teeth, bone, muscle, nerve, brain, also the material for heat and energy. The mother should simplify the diet of her family and use only such foods as contain the material to build the body properly. We know how to build horses and cattle, but the human being is sacrificed to ignorance.

Mr. Perky intended educating at his Institute two hundred and fifty girls in cookery, chemistry of food, marketing, house economics, laundry, sewing, physical culture, sanitation, physiology, physics, the care of infants, first aid, and nature study, with the view of instructing the public on primary matters of health.[73]

The following passages are, I think, sufficiently apt for quotation. Sentiment and aspiration are as much a part of humanity, and as worthy of the regard of science, as material facts.

> "Some, as thou sawest, by violent stroke shall die,
> By fire, flood, famine; by intemperance more
> In meats and drinks, which on the earth shall bring
> Diseases dire."
>
> —MILTON.

Pythagoras speaks (through the Roman tongue):

> "He first the taste of flesh from tables drove,
> And argued well, if arguments could move:
> O mortals! from your fellows' blood abstain,
> Nor taint your bodies with a food profane.
>
> . . . . .
>
> "O impious we! to Nature's laws opposed:
> Where bowels are in other bowels closed;
> Where fattened by their fellows' fat they thrive,
> Maintained by murder, and by death they live.
>
> . . . . .
>
> "What else is this but to devour our guests,
> And barbarously renew Cyclopean feasts?
>
> . . . . .
>
> "Whoever was the wretch, and cursed be he
> That envied first our food's simplicity,
> The essay of bloody feasts on brutes began,
> And after forged the sword to murder man?"
>
> —OVID.

" While Heaven, the universal Friend,
Fills high the cup of woe
Of fear and shame and vengeance dire
For man, the universal foe.
. . . . . .
" O lone Humanity! to the fell race
Thy soul-subduing gifts impart,
That every Love and every Grace
On their ensanguined work may smile
And triumph in their heart.
So shall their hands from carnage cease,
And high upon thine altar pile
The fruits of charity and peace." —THOMAS YOUNG.

" Never to blend our pleasure or our pride
With sorrow of the meanest thing that feels."
—WORDSWORTH.

" No flocks that range the valley free
To slaughter I condemn ;
Taught by the power that pities me
I learn to pity them." —GOLDSMITH'S *Hermit*.

Coleridge wrote his well-known verses, " He prayeth best, who loveth best," in the same spirit.

" Man, once fleeting o'er the transient scene,
Swift as an unremembered vision, stands
Immortal upon earth! No longer now
He slays the lamb that looks him in the face
And horribly devours his mangled flesh,
Which, still avenging Nature's broken law,
Kindled all putrid humours in his frame,
All evil passions, and all vain belief,
Hatred, despair, and loathing in his mind,
The germs of misery, death, disease, and crime.
No longer now the winged inhabitants,
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."—SHELLEY.

In his "Vindication of a Natural Diet," Shelley wrote :

"There never was an instance wherein a change from spirituous liquors and animal food to vegetables and pure water have failed ultimately to invigorate the body, by rendering its juices bland and consentaneous, and to restore to the mind that cheerfulness and elasticity which not one in fifty possesses on the present system."

"Crime is madness. Madness is disease. Whenever the cause of disease shall be discovered, the root from which all vice and misery have so long overshadowed the globe will lay bare to the axe."

"The system of a simple diet . . . strikes at the root of all evil. . . . In no cases has a return to vegetable diet produced the slightest injury." . . . "By all that is sacred in our hopes of the human race, I conjure those who love happiness and truth to give a fair trial to the vegetable system."

Shelley then relates from his personal knowledge how seventeen persons had lived for seven years on the natural diet, without a death and almost without the slightest illness. Some of these were infants, one a martyr to asthma "now nearly subdued."

"The most fertile districts of the habitable globe are now actually cultivated by men for animals, at a delay and waste of aliment absolutely incapable of calculation."

"The advantage of a reform in diet is obviously greater than that of any other."

"The proselyte to a pure diet . . . will be," after a short time, "equally capable of bodily exertion or mental application, after, as before, his simple meal."

He will find a simple meal of various vegetables and fruits satisfying in a high degree to the pleasures of taste.

"All depends upon breaking through a pernicious habit resolutely and at once."

The following passage represents the teaching of Gotama, the greatest of the Eastern world :—

"But Buddha softly said :
'Let him not strike, great King!' and therewith loosed
The victim's bonds, none staying him, so great
His presence was. Then, craving leave, he spake
Of life, which all can take, but none can give—
Life, which all creatures love and strive to keep,
Wonderful, dear, and pleasant unto each,
Even to the meanest ; yea, a boon to all
Where pity is, for pity makes the world
Soft to the weak and noble to the strong.
Unto the dumb lips of his flock he lent
Sad pleading words, showing how man, who prays
For mercy to the gods, is merciless,
Being as god to those ; albeit all life
Is linked and kin, and what we slay have given
Meek tribute of the milk and wool, and set
Fast trust upon the hands that murder them.

. . . . . .

While still our Lord went on, teaching how fair
This earth were if all living things be linked
In friendliness and common use of foods,
Bloodless and pure ; the golden grain, bright fruits,
Sweet herbs which grow for all, the waters wan,
Sufficient drinks and meats. Which when these heard,
The might of gentleness so conquered them,
The priests themselves scattered their altar-flames
And flung away the steel of sacrifice ;

. . . . . .

So ran the edict, and from those days forth
Sweet peace hath spread between all living kind."

The Light of Asia—EDWIN ARNOLD.

CHAPTER IX

Medical Testimony and Experiences on Diet

In adducing evidence from some of the most distinguished medical men of our time, and of earlier periods, on the subject of food, I wish to state clearly that I do not think it necessary to go back to those who have expressed opinions common in their day favourable to a very full or rich dietary, or to copious potations of port or other wine, or to articles of nutrition which are now known by well-tested experiment to be of little if any value. And as regards the use of animal flesh, I have not included many who advise it, for we may, I think, assume that the majority of the profession are still trained under the old system —still have the flesh of quadrupeds on their tables, and still recommend it. This may be taken for granted. I wish rather to bring forward the views of a very strong and capable body of witnesses, competent physicians, with wide experience, who find that life and health can be sustained at least as well on the products of plants. In earlier chapters I have given the opinions of some of the greatest physiologists on this subject. But in the present chapter will be found abundant testimony of high importance on the food question in general, from masters in medicine and hygiene.

The first witness, one who gave very special atten-

tion to diet, became more and more convinced in his later life of the damage to vast numbers of people which follows from excess, especially in flesh-eating.

"I have come to the conclusion," Sir Henry Thompson wrote, "that more than half the disease that embitters life is due to avoidable errors in diet, . . . and that more mischief, in the shape of actual disease, of impaired vigour, and of shortened life, accrues to civilised man from erroneous habits of eating than from the habitual use of alcoholic drink, considerable as I know that evil to be."

Dr. John Hunter was subject to gout, and found in apples, or probably in a very light dietary, a remedy for his sufferings. He insisted that all his patients should discard wine and roast beef, and use apples freely.

Dr. Parkes sums up his observations on animal and vegetable diets as follows: "The meat-eater and the man who lives on corn or peas and rice, are all equally well nourished. . . . The rapid movements of the carnivora have been contrasted with the slow, dull action of domestic cattle; but not to speak of the horse, whoever has seen the lightning movements of the wild antelope or cow, or even of the wild pig, which is herbivorous in many cases, can doubt that vegetable feeders can exert a movement even more rapid and more enduring than the tiger or the wolf?"

As regards the tendency to gout, he says: "Very often large meat-eaters are not gouty, and do not appear in any way overfed. In this case, either a great amount of exercise is taken, or, as is often the case in these persons, the meat is not absorbed, owing frequently to imperfect mastication."[1]

With regard to the food of British troops in India, Parkes wrote: "It has been stated by several of the best observers in the tropics, that those who eat largely of animal food are less healthy than those who take more vegetable food; and Friedel, in his work on China, has lately again directed attention to the fact that the amount of digestive and hepatic disease is much greater among the English than among any other European settlers in China. But whether this is owing to excess of animal food or excess generally in all food, and to too much wine, beer, and spirits, is uncertain.

"The use of ages has accustomed the Hindoo to the custom of taking large quantities of rice, with pulses or corn. Put a European on this diet, and he could not at first digest it; the very bulk would be too much for him. The Hindoo, with this diet, is obliged to take large quantities of condiments. The European who did the same would produce acute gastric catarrh and hepatic congestion in a very short time."

Two points, says Dr. Parkes, are quite clear. Spirits are most hurtful; wine and beer must be taken in great moderation. And the use of fruits is of great importance.

In regard to health in India, Sir Joseph Fayrer advised that: "New arrivals should abstain from much animal and stimulating food, with a view to avoid plethora, dyspepsia, mal-assimilation, and congestion of the already overtaxed liver and eliminating organs. Curries, as generally prepared, should be sparingly consumed. It is not advisable to copy the natives in respect to diet. . . . By degrees the food

may be modified to suit the altered conditions of climate. . . . As a rule, people eat too much in India.

"As to wine, beer, and spirits, . . . their use is, at least, an acquired habit in healthy young men and women. . . . Whatever may be said on other grounds, it cannot be regarded as an absolute necessity for them at least.

"We wish it to be clearly understood that we do not advocate the use of alcoholic stimulants except as medicine."

Cold tea, not too strong, and *pure* water are recommended.

The constant daily habit of excessive smoking, over a long series of years, produces much functional mischief and misery. It frequently disturbs the equilibrium of the nervous system and the action of the heart, causing nervousness, giddiness, muscular tremor, and palpitation. It impairs digestion, depresses the system mentally and physically, and muddles the intellectual faculties. Cancer of the lip and tongue, and chronic inflammation of the back and sides of the throat, are often ascribed to it, as cancer of the æsophagus and stomach have been attributed to chewing and snuffing.[2]

Dr. de Chaumont, F.R.S., spoke in 1879 to the following effect:[3]—There is a form of starvation not only common but almost universal among the poorer classes of the people; this kind of starvation depends upon the neglect or want of vegetable food. This starvation formerly caused terrible ravages in the army and navy, resulting in scurvy. A good supply of vegetables is necessary for health. Potatoes are

valuable, but by peeling them before cooking we lose the most valuable part of the juice; they should be steamed, stewed, or made into soup.

"Another form of starvation is the want of nitrogenous or flesh-forming food. This food is best known in the form of meat, eggs, cheese, or milk, but it exists in large quantities also in flour, oatmeal, Indian meal (maize), and especially in beans, peas, and lentils. These last—peas, beans, and lentils—are most nourishing, and ought to be much more used than they are; they contain much more of the flesh-forming food than the best meat."

"Fat is a most essential thing, and no hard work can be well done without it. . . . If children could be more generally fed on milk in their earliest years, and get a fair share of butter when they are able to eat it, they would be not only more healthy themselves, but would also be the parents of a healthy offspring." Dr. de Chaumont then condemns the common practice of feeding infants with starchy food which they are unable to digest.

Dr. Hutchison, in his work on Food, says that whole-meal bread is in the end rather less nutritious than white bread; but at the same time it may be much more wholesome, for it contains phosphates, etc. which are lacking in the white, and certain mineral constituents in small quantity are of great importance to the constitution. Dr. Haig agrees with Dr. Hutchison as to the failure of the digestion to deal with the branny parts of the wheat, and the consequent waste, but seems further to object to the whole-meal on account of "uric acid" or its equivalent. This seems to be going to an extreme of exclusion. Meanwhile, perhaps

the safest bread-stuff to rely upon is "seconds," flour and "super-cooked" meals. The crust of bread, well baked, is known to be much more nourishing than the crumb.

In an address given at a later date,[4] Dr. Hutchison stated that under-feeding is habitual in the East of London. Insufficient food causes a craving for alcohol. A good diet can be obtained for 4d. a day; the workman spends 7d. "I advise the buying of more vegetable foods, particularly peas, beans, lentils, and cheap fish. Cheese, cooked in a digestible way as the Italians do, is a valuable article of diet." "I strongly recommend one good meal of oatmeal a day, instead of so much bread, butter, and tea, which is the staple diet of so many poor families, because it is so easily prepared. Skimmed milk contains all the original proteids. Margarine is quite as nourishing as butter, and better than jam."

Dr. T. K. Chambers has made the following general observations:[5]—

No food has been found so suitable for the young of all animals as their mother's milk. The wholesomest food for the first six months is milk alone. Later, some food in addition may be given cautiously, of a character adapted to the child's condition and constitution. A little broth, chicken soup, with cream and sugar, tops and bottoms, etc., may be tried; but "the consequences of premature weaning are insidious. The external aspect of the child is that of health, its muscles are strong, but the bones do not harden in proportion, and if it tries to walk, its limbs give way, and it is said to be suffering from rickets. These consequences follow in other animals as surely as in the human race."

In later years, up to at least fourteen or fifteen, "the rule should be four meals a day, after that three full meals a day are generally sufficient.

"Up to the period of full development the daily use of wine should be allowed only during illness and the express attendance of a medical adviser."

For laborious work, digestible nitrogenous food, meat *par excellence*, must be provided. A contractor for railways in Sicily found the work done by Sicilian navvies considerably increased, almost up to the British average, by paying the men partly in meat.

"It is absolutely essential that the fleshly machinery for doing work should be continuously replaced by flesh food, as it becomes worn out." [But see *infra* in the same article.]

By experiments with soldiers marching twenty miles a day with loads of 56 lb. each, it was found that meat-extract was better than stimulants. [Might not even hot water have been proved superior to wine or spirits? Beef-tea is now proved to be of hardly any nutritive value.]

The Oxford system of training twenty-five years ago gave meat and bread for breakfast and for dinner, with vegetables and beer added, and much the same for supper as for dinner.

"Indigestion, sleeplessness, nervous indecision, palpitation of heart, irregularity of bowels, disappear under training."

A small quantity of alcohol was considered beneficial. "Life is fuller and more complete, old flesh is removed and food appropriated as new flesh somewhat more quickly than when no alcohol is ingested."

[Recent physiological science does not, on the whole, confirm these opinions.]

"Rest from brain-work for twenty minutes before meals, entire abstinence from it during meals, and rest again till the weight has passed off the stomach, are essential to the reconcilement of physical exertion with bodily health."

In acute rheumatism and acute gout, "if meat in any form, solid or liquid, be eaten, it seems to turn into acid, which is already in excess in the blood."

Chronic gout "is due to good cheer indulged in either by the sufferer or by his ancestors. . . . The children of gouty families should be brought up to a life of strict abstemiousness and muscular activity." This regimen is therefore proper for a very large proportion of the members of the richer classes. "Gouty adults require meat but once in the twenty-four hours."

In all degenerative lesions alcohol has a baneful influence. Dr. Cheyne, a Bath physician of the eighteenth century, adopted a milk diet in middle life (fifty-five), and restricted himself entirely to milk and biscuits. After sixteen years' experience of this diet, with a large practice, he found three pints of milk and six ounces of biscuits a day fully sufficient.

For dyspeptics with a weak and slow digestion, three very moderate meals are sufficient, and after a full meal no more food should be eaten for seven or eight hours. Five hours at least should intervene even between small meals.

It is good for flatulent dyspeptics to try eating only meat and bread at one meal, and only vegetables at another.

Dr. Chambers seems, on the whole, to favour a mixed diet, but, in the last part of the article, gives credit to the discovery of the production of force from starch, by which energy may be raised to the full height of usefulness.

He observes that, according to the experience of Mr. Vizetelly, the Spanish labourer in a vineyard consumes 8 or 9 lb. of bread, onion porridge, and grapes; the Eskimo, using only animal food, can eat 20 lb. of it in a day. This estimate seems to be made on the authority of Sir John Ross. It refers to a rare feast.

On a mixed dietary, says Dr. Chambers, only 2 lb. of bread and $\frac{1}{2}$ lb. of meat would be sufficient.

Dr. Playfair, F.R.S., in his lectures to the Royal Institution, laid down the following quantities as adapted to the lowest condition of sustenance with little activity :—$2\frac{1}{4}$ oz. nitrogenous, 1 oz. fat, 12 oz. starchy, $\frac{1}{4}$ oz. mineral matter. Penal diet, on which a fair amount of work can be done, has—nitrogenous 3·784 oz., carbo-hydrates 19·864 oz., fat 1·580 oz., mineral 0·972 oz. It is just sufficient to maintain strength and weight.

Professor Lawrence, F.R.S., in one of his lectures in 1823 at the College of Surgeons, said that " in the periods of their greatest simplicity, manliness and bravery, the Greeks and Romans appear to have lived almost entirely on plain vegetable preparations; indifferent bread, fruits, and other produce of the earth are the chief nourishment of the modern Italians, and of the mass of the population in most countries of Europe; of those more immediately known to ourselves, the Irish and Scotch may be mentioned, who are certainly not rendered weaker than their

English fellow-subjects by their freer use of vegetable aliment."

Mr. Gilman Thompson, Professor of Medicine at Cornell University, United States, wrote as follows :[6]—

" The northern Eskimo, who has absolutely no starchy or saccharine food, . . . resists extreme cold and takes very long and fatiguing journeys by sledge, yet he is no stronger, nor as strong, as the Central African negro, who lives upon a diet of manioc and plantains without meat.

" The Australian savage eats berries, pith, nuts, honey, larvæ, ants, etc.; the Papuan, sago, fish, fruits; the New Caledonian *now* chiefly vegetables.

" The Mongol eats with his rice small quantities of fish, eggs, and goose livers, but for his proteid he relies upon bean cheese and sauce from soy beans.

" The Mexican, whose supply of meat is scanty and of a poor quality, uses the native bean at almost every meal, with vegetables, or perhaps shreds of sun-dried beef."

The ancient Britons were known to have lived largely on acorns, berries, roots, leaves, etc.

In an official Report upon insanity in Ireland, *tea* is mentioned as a contributing factor. A very poor quality is used, and it is often stewed nearly all day. Its use is now general among the poorer population.

The United States consumes per head 1·33 lb. of tea, 7·8 lb. of coffee. " By drinking two or three cups of black coffee (strong) at every meal, muscular tremors are sometimes developed, with nervousness, anxiety, dread of impending ill, with palpitation and

feeling of precordial oppression, bradycardia, vertigo, heartburn, dyspepsia, constipation, and insomnia."

In children the effect of coffee is insomnia, night terrors, nervousness, and tremor.

In 1899, the United States consumed one-third of the total amount of coffee produced, more than Germany, Austria, Hungary, France, and the United Kingdom. England and her colonies consumed half of the output of tea.

As regards alcohol, Otto Snell asked sixty expert mountain-climbers their opinion of the use of alcohol. Fifty-five out of sixty declared that they found it harmful before or during their exertions.

For brain workers, Mr. Thompson advises flesh once a day in moderation ; milk, eggs, fish, fresh fruit ; light, porous, dry bread, or toast ; a very light midday meal, or at any time before the conclusion of work.

He cites the instance of Cornaro, who lived to the age of one hundred and three, and for forty-eight years subsisted on 12 oz. of vegetable food, some eggs, but rarely flesh, and 14 oz. of light wine.

The fare recommended is as follows for brain-workers :—

Breakfast—fresh fruit, cereal with cream, poached egg, boiled fish, bacon, tea or coffee.

Lunch—roast potato, with butter and cream, or beans and bacon, light sandwiches of game or relish, cheese, lettuce or salad, baked apple, cream.

Dinner—soup, roast or joint, vegetables, light farinaceous pudding.

Overeating and violent exercise studiously avoid.

Dr. Alexander Haig, M.A., M.D. Oxon., F.R.C.P.,

writes :[7] "Given sufficient albumens, it is a matter of very little consequence where they come from, whether from the animal or vegetable kingdom. . . . It is possible, by introducing more food than can be readily digested, to overpower digestion, so that nothing is digested and absorbed, and starvation results."

Exercise brings excess of uric acid into the blood, . . . increasing its alkalinity, thus rendering it a better solvent of uric acid, so that it will dissolve more of the uric acid available in the tissues. In a word, exercise acts like a dose of alkali. . . .

"Hence the records we are now getting from all sides show that the less animal flesh a people take the better do they come out in trials of force-production, and especially in endurance. . . . In endurance those will do best who get their albumens from such animal and vegetable sources as are practically free from uric acid, and who do not indulge in such stimulant poisons as tea, coffee, and other similar alkaloid-containing substances."

"Now, so far as I know, the vegetarians of this country are pretty decidedly superior in endurance to those who feed on animal tissues, and who might otherwise be expected to equal them; but these 'vegetarians' would be better still, as I have for some years been pointing out, if they not only ruled out animal flesh, but also eggs and the pulses (peas, beans, and lentils), asparagus, and mushrooms, which contain a large amount of uric acid, or substances physiologically equal to uric acid, also tea, coffee, and cocoa."

Dr. Haig then shows that flesh, beef-tea, soups, meat-extracts, and other "deadly decoctions of flesh," are stimulants, quickly evolve quantities of force, and

consequently produce a corresponding amount of depression. "Stimulation is not force, but force rendered a little more quickly available." . . .

"Hence it comes about that those who took alcohol on a flesh diet generally very soon give it up when they give up flesh, and smoke also very little, having no craving for any stimulant; while if what most meat-eaters say were true, that meat is very much better nourishment," it ought to be exactly the other way.

"Another very common effect of meat eating . . . is a certain amount of dulness, heaviness, and disinclination for bodily or mental exertion in the morning hours, often associated with more or less irritability and mental depression."

. . . The uric-acid-free foods fall into the following classes:—

(1) Milk and milk products, as cheese and protene.
(2) Bread-stuffs, cereal foods, and glutens.
(3) Nuts and nut foods.
(4) Garden vegetables, as potatoes.
(5) Garden fruits, as apples.
(6) Dried and foreign fruits.

Milk should be taken at one or two of the three daily meals, and distributed among the rest of the foods, such as bread, cereals, vegetables and fruits. It should *not* be taken between good meals "to keep up strength."

Similarly cheese should be broken up, and not eaten at the end of a meal already too heavy; it should be taken early in the meal, well distributed, or grated, and masticated. 2 or 3 oz. of cheese a day for persons living on a mixed diet is generally sufficient.

Plasmon may be used in place of milk, and protene in place of cheese.

As regards bread-stuffs, the most important thing is their thorough mastication and mixture with the saliva before swallowing, and for this reason they should be eaten dry, as toasted bread, rusks, or biscuits. Porridge and milky puddings are less easily digested, so is new bread. Puddings should always be firm and solid, for they require plenty of mastication.

Simple food of not more than two or three kinds at one meal is a great secret of health.

Cereals have been the food of mankind in the past, and they are still the food of the great majority.

"The minority are paying a hideous price for their unnatural but stimulating flesh foods, and the chief advice I have to offer is to return without delay to the corn of their ancestors."

Complete and thorough cooking of cereal foods is important, and useful in dyspepsia.

Chestnuts when well cooked are easily digested by almost everyone. Chestnut flour can be obtained from the grocer, and can be mixed with other flour and made into scones, etc. Pounded almonds can be similarly used, but special care must be taken to use nut food appropriately and sparingly.

"A pound of bread and a pound of the more nourishing dried fruits—dates, figs, raisins—would supply the albumens for a day's food, and this is, I think, the most satisfactory and generally useful form of the uric-acid-free diet."

Garden fruits as eaten contain about 2 per cent. of albumen.

Of the above numbered classes, it is possible to live

on (1) alone, also on all the rest without (1), relying chiefly on (2), (3), and (6). It is not possible to live on (4) and (5), and generally in this country not on (6) alone.

Butter and oil can be much more freely taken on a meat-free diet. "I look upon good olive oil as a valuable substitute for butter." It is specially nice with vegetables. [It is good with polenta of maize, with potatoes, and with whole rice and wheat.]

The digestive, hepatic, and other disturbances that accompany bilious attacks and sick headaches are due to uric acid.

Excess of cereals often decidedly increases acidity, and tends to cause retention of uric acid in the body, and acting with other causes may even lead to gout and rheumatism.

Thus horses suffer considerably from rheumatism.

Albumens should be diminished in such cases, and a little wholesome starvation, with plenty of vegetables, is likely to prevent the dreaded disease. Most children that suffer are poisoned with uric-acid-containing foods in addition to being overfed.

The rheumatism which affects the natives of India is partly due to the introduction of uric acid or xanthin in the pulse foods so largely used. Many pulses contain actually more xanthin than many kinds of animal flesh.

Uric acid is met with in excess in the body and blood chiefly from excess of meat, eggs, fish, pulses, mushrooms, asparagus, tea, coffee, cocoa, and guarana, and from excess of nitrogen ingested.

"In my own experience, some of the most terrible cases of high blood pressure and vascular degeneration

have been in dahl-consuming natives of these Indian provinces."

To the excessive use of flesh and tea, as in Australasia, might probably be traced a long array of deadly diseases and an almost equal number of mental and moral defects.

"In this country I should attribute to the poisons of flesh and tea the all-pervading anæmia." Without meat and tea "I have fifty per cent. better health."

"Man has been provided neither with the teeth to cut flesh nor with the power to hold its poisonous salts in solution and pass them out of his body." "The record of his teeth shows that his structure has remained unaltered over vast periods of time." Photographs and diagrams are given showing the great similarity of the teeth of man to those of an orang, and the great difference from those of a leopard [or other carnivore].

In relation to training for athletics, Dr. Haig strongly recommends abstinence from flesh, tea, coffee, etc. He examined Karl Mann, the winner of the great German race, who was seven hours in front of the first flesh-eater. "His circulation was better than that of any meat-eater, which, to a large extent, explains his victory."

Concerning alcohol, tobacco, and other stimulants, he holds extreme views: "Practically those who use them are weak or diseased, and are entering on the road to physiological bankruptcy.

"The deadly path of stimulation once entered upon has only too often led to the complete ruin of mind and body."[8]

According to Dr. Farquharson, M.P., the farm labourer in Scotland did a great deal more work on

oatmeal and milk than the labourer in England who ate flesh. "There are a great many diseases, such as gout, rheumatism, diseases of kidneys, etc., which were produced by eating inordinate quantities of meat."[9]

Dr. W. B. Carpenter, F.R.S., M.B., wrote in his *Human Physiology* (1876), p. 89: "Whilst on the one hand it may be freely conceded to the advocates of vegetarianism that a well-selected vegetable diet is capable of producing (in the greater number of individuals) the highest *physical* development of which they are capable, it may, on the other hand, be affirmed with equal certainty that the substitution of a moderate proportion of animal flesh is in no way injurious, whilst, so far as our evidence at present extends, this seems rather to favour the highest *mental* development.

"That it is water which constitutes the natural drink of man, and that no other liquor can supply its place, is apparent from the most cursory glance at its uses in the system." Dr. Carpenter gives a series of exceedingly cogent reasons against the habitual use of alcohol.

Dr. J. Madison Taylor, of New York, writes: "In laying the foundations of constitutional vigour by giving the chief attention to the disorders of children, their proper feeding and hygiene during the first few months of life, the foundation of longevity [and of strength] is capable of being firmly laid. . . . If the foundations be well laid, the problem of the superstructure can be made a matter of exact procedure." Natural methods [human milk] are by far the best. "Another fact, . . . very old people nearly all spent

the earlier months and years of their lives outside large centres of population." "It is a fact abundantly well known, and yet not of popular knowledge, that constitutional vigour is practically impossible except in the first generation of those who live in large centres without change." Alcohol produces "infinitely worse" results upon the second and third generation than opium. "The potentiality of cellular cleanliness and lymph activity on the mechanism of life is paramount." "Temperance in food and drink is an essential condition of the best results." [10]

Professor Elie Metchnikoff writes:

"Hufeland advised that we should use vegetable rather than animal food, as animal food is more liable to putrefaction, whilst vegetable substances contain an acid principle which retards our mortal enemy putrefaction. Here the physician of a day long past anticipates one of the discoveries of modern science."

"I am justified in asserting that senile decay is mainly due to the destruction of the higher elements of the organism by macrophags." [The macrophags are large phagocytes.]

"The slow intoxications that weaken the resistance of the higher elements of the body and that strengthen the phagocytes [harmful] may be arrested by the use of kephir, or still better, of soured milk. We should eat no raw food. . . . The duration of the life of man may be considerably increased.

"Progress would consist in simplifying many sides of the lives of civilised people.

"Conviction that science alone is able to redress the disharmonies of the human constitution will lead

directly to the improvement of education and to the solidarity of mankind." [11]

Dr. George Keith, M.D., LL.D., wrote a few years ago: [12] "I believe, from observations on myself and others, that Sir B. Richardson is quite right in his conclusion, come to from strictly scientific investigation, that alcohol, in every form, lowers the strength of man. Alcohol may possibly be of use in the rare occasions where a temporary stimulus is all that is wanted."

Dr. Keith is convinced that in most cases of illness very little food should be eaten, and that in almost every case disease is aggravated by food when it cannot be properly digested, and that the suffering to the patient is enormously increased. A simple and short case is often converted into a long and severe one by giving food when it is not wanted.

"I have long looked on hot water as the most real stimulant that we have.

"The doubtful remedies which are, as a rule, to be avoided in states of disease are medicines of all kinds, alcoholic stimulants, and food." Rest, warmth, water, and fresh air are generally the best means of cure.

Excess of animal food may be taken for years without evident harm, but long before what should be the natural span of a healthy life, ugly signs of disease unexpectedly manifest themselves, and the till now strong and healthy man is told that his case is hopeless and beyond the means of possible cure. Naturally the overworked kidneys are the first to give out, and failure on their part may prove fatal; or the blood gets loaded with animal matters, of which they fail to relieve it. A very common evil arising in this way is what is called general paralysis; the

number of cases has increased enormously during the last thirty years. "I cannot recall a case which was not that of a previously healthy individual who lived fully.

"In the great majority of cases of errors of food in quantity, the excess is of both kinds, carbonaceous and nitrogenous. . . . The ablest men in science, art, and literature seem to suffer most."

Dr. Keith agrees with Dr. Haig in his opinion of the pernicious effect of flesh food in increasing uric acid and producing anæmia.

He was told by one of the first financiers in Scotland that a whisky-drinking Highlander at sixty, living on a very small quantity of oatmeal or potatoes and milk, has a better life on which to buy an annuity than a "well-fed" Yorkshire teetotaller of the same age.

Sir Henry Thompson wrote to the *Times* some years ago, that he felt constrained to publish his conviction that the main cause of the terrible sufferings he had to treat was the "glass or two" of wine which so many of his patients had been in the habit of taking daily. It was Sir Henry Thompson who used the phrase, in reference to overeating, that "the grave is dug with the teeth."

"In my young days," says Dr. Keith, "in the twenties and thirties (1820–1840), the food of the working-man, and also of the upper classes, was simple and good. It consisted mostly of milk, eggs, oatmeal, fish, potatoes, and a few other vegetables. The 'strong' meat of navvies in these days may not be the best form of sustenance. A navvy is worn out at forty, and a navvy at forty-five is scarcely known. This I had

from a Dunfermline doctor full forty years ago; his work was largely among navvies.

"I came long ago, in the course of reading, on three celebrated men who, when engaged in working out some great problem in science or war, took actually no food till the strain was over. They were Sir Isaac Newton, Napoleon, and the Duke of Wellington. The latter was always a careful eater. General Crockett, who was with him in the Peninsula, told me that often when a long menu was presented to him he would run his finger down till he came to the pudding, which he would order and dine upon." Edison was still more abstinent when engaged in important work.

Dr. William Hall, of Leeds, states[13] that of 2700 children examined at Leeds—at eight years old the Jewish child was 3 lb. heavier and 2 in. taller than the Gentile, at sixteen years old $6\frac{1}{4}$ lb. heavier and $2\frac{1}{2}$ in. taller, at twelve years old 7 lb. heavier and $2\frac{1}{2}$ in. taller.

Fifty per cent. of the Gentile and seven per cent. of the Jewish had rickets.

The Gentile child from a faulty formation of the mouth becomes a mouth-breather.

The Jewish child is superior, comparatively straight and firm, owing to difference in food.

Sixteen hundred ancient skulls show no instance of a mouth-breather. The defective palate is "a new feature."

The Jewish mother suckles her child and stays at home, her first duty being the care of the children and the preparation of food. The parents live well on eggs, poultry, fish, olive oil, pancakes, fruit, sugar. They

and their children are better able to resist disease owing to their excellently chosen diet.

The British child is given a penny for his dinner, and gets odds and ends of innutritious food—black pudding, tinned fish, sausage, poloni, or what not, sometimes a cigarette; while not a few British fathers and mothers drink beer and gin, and eat meat, biscuits, cheese, etc., at the public-house. Blood, liver, entrails, and onions enter largely into the common fare.

The report of the Royal Commission on Physical Training, Scotland, 1903,[14] contained the following statements:—

Among a large number of school children examined at Edinburgh and Aberdeen the following percentages of diseased conditions were found:

	Aberdeen.	*Edinburgh.*
Diseases of refraction in the eyes . . .	23·9	31·67
Diseases of the eyes and eyelids . . .	12·2	15·5
Diseases of the ears, causing defective hearing .	14	42·04
Catarrh of the eyes	About 5	About 5
Disease of the heart	...	4·33
Disease of the lungs	...	3

In Edinburgh Board Schools there were about 700 cases of unrecognised phthisis; in Aberdeen, 458: in Edinburgh, 1300 cases of unrecognised heart disease of a dangerous nature; in Aberdeen, 250. Of lesser ailments, in Edinburgh, 15,000 children with diseased throats; in Aberdeen, 7500. It is estimated that there are ailing children, in Edinburgh, 10,500, and in Aberdeen, 5700, all needing attention. The total number of school children in Edinburgh is about 30,000; in Aberdeen, 25,000.

Evidence of Dr. W. Bruce.—In the Western Highlands the people have given up porridge and

broth, which used to build up the constitution, and have gone in for tea and slops and such food. Many of the children are anæmic. In Lewis, however, the children who have been ill-fed grow up into very strong, healthy men [and women]. "I do not think there is any deterioration in the race."

Evidence of Dr. Dukes.—All soups and beef-teas are far more a stimulant than they are a food. Soup is not nearly such a good food as porridge and milk, bread and milk, or bread and butter and milk. If you mix soup with peas, beans, lentils, or rice, that is good. A child will starve on ordinary soup made from meat. Children are not often underfed in Scotland.

Dr. Lauder Brunton urges that it is of the very greatest importance that it should be thoroughly understood that strength cannot be maintained on beef-tea. On beef-tea alone the invalid would starve. Voit proved that dogs fed upon meat-extract quickly died.[15]

A physician wrote in 1903 as follows:—"We are living on false stimulants, . . . we are learning and even nationalising bad hygienic habits. . . . It all ends in nerve-storms and new nervous diseases, and fresh outlets of morbid methods on the part of outraged human nature. . . . I am writing as an observing physician, who cannot reconcile England's continued greatness with the growing luxury practised by her sons." The letter proposes a guild of simplicity for plain and clean living and thinking.[16]

Dr. J. Batty Tuke, M.D., F.R.C.P., F.R.S.E., wrote some years ago: "The food of the working classes in some respects is improved, but also it has become deteriorated by the disuse of a very important item, porridge

and milk, for which has become substituted a much less nutritious, and in itself somewhat deleterious, article of diet—tea and bread. . . . The Scot in days gone by fought and worked on meal alone. . . . In some parts of the country at the present time the Scottish ploughman worked, and works, his day's darg on porridge and milk for breakfast, for dinner, for supper."—(*See* Lord Elibank's answer to Dr. Johnson.) "The physiologist will tell you that porridge and milk is a 'typical' food—*i.e.* that it contains all the necessary constituents of food in the most perfect proportions." Bread, continued Dr. Tuke, is made often of inferior flour, which carries a great deal of water; if new, it is indigestible; if too old, tasteless or sour. "But it is the constant use of tea which I would most strongly deprecate. It is an old saying in Scotland that 'tea is bad for the nerves,' and this is certainly true." Tea, unless properly prepared and sparingly used, is harmful in itself, and, moreover, takes the place of the best of nutriments, milk. "It is open to argument whether the whisky bottle or the teapot exercises the more baneful influence on the public constitution."[17]

Dr. T. S. Clouston, M.D., said: "Certain physical conditions are absolutely necessary to the proper growth and development of a child. Food should be abundant and simple. Milk, bread, butter, vegetables, and Scotch broth [mixed barley and other vegetables], are the very best of all foods for children, and they should be given in abundance. . . . Flesh is neither necessary nor good for them in any but small quantity. Flesh-eating children are often nervous and thin, both of which are contrary to nature's type of child. Fresh air in abundance is absolutely necessary. Exercise

and play are nature's best aids to proper development." [18]

Dr. John Chiene, F.R.C.S.E., stated that the average (1867) of sickness in friendly societies was 2·45 weeks a year for all persons between twenty-one and seventy. Counting the less prudent men who are not members, the average may be put at 2½ weeks. This means a loss, through loss of work and efficiency, of £16,633,359, or £1,108,890 for each day of sickness.[19]

Dr. Robert Bell, M.D., writes: "I will go this far, that of all systems, that of the vegetarian is the most rational, and I can affirm that, if it were universally adopted, there would be greater happiness and longer life than at present exists. There are more deaths and greater bodily suffering due to overfeeding than all the diseases put together. There is not the slightest doubt that upon a vegetarian diet the human frame can thrive most satisfactorily, and combat disease better than on an animal diet." [20]

Dr. Josiah Oldfield wrote in 1902: "I have seen children of all ages who have been accustomed to eating meat, and who have suddenly come under conditions where no flesh food was given. I have seen young men and middle-aged men, some of whom had been abstemious livers, and some of whom had been luxurious *bon vivants*, and who immediately and entirely gave up meat altogether, and all with the happiest results." Also Dr. Oldfield has had under observation men of sixty to seventy who at a single stroke had all meats and meat-extracts cut off, and in no case was the result injurious, but, on the contrary, in the majority of cases there was improved vigour.

His experience in villages where Hindoos and

Mahometans lived side by side in India was that the latter, who are flesh-eaters, were not, in the same conditions, superior in stamina.[21]

Dr. John Haddon, of Denholm, writes[22]: "Very early in my career I saw that much illness was caused by food, but only recently has the importance of the subject been brought home to me, and at last I began to realise . . . that all diet-produced diseases may be banished by the study of food and the adoption of a rational diet.

"Still I remained ignorant of the facts that man, originally, must have been a frugivorous animal, and can live and thrive better if he abstain altogether from animal food." Dr. Haddon believes "that diet is infinitely more potent in the prevention and cure of many diseases than drugs."

"Parry in his work relates the case of Thomas Wood, the miller of Billericay, who lived in vigour for upwards of eighteen years on no other nutriment than 16 oz. of flour made into a pudding with water. This represents 112 grains of nitrogen and 2688 grains of carbon. Thus we may conclude that 112 grains of nitrogen are sufficient to supply the waste of tissues in the work of a miller, although it is taught that 300 grains are necessary for everyone."

"I have myself lived for weeks without any food (even eggs or milk) derived from the animal kingdom, and felt my general health and vigour improved, if anything, by the change."

Dr. Haddon then relates three cases—one of anæmia and ill-health of three years' standing, perfectly cured by substitution of porridge, rice, and milk for animal food and wine; one of a man suffering from Meniere's

disease, very greatly improved in health by diminution of, and almost abstinence from, butcher meat; and a third, of an old lady with weak heart, and incapable of any exertion, being restored to moderate activity and good sleep by a very light diet, without animal flesh.

Another lady, who had been an invalid for years with persistent constipation, was cured by the following diet:—

Breakfast—A raw, ripe apple, whole-meal bread with butter, cocoa made with water.

Dinner—Vegetable soup, a slice of whole-meal bread toasted hard and added to the soup, two potatoes.

Supper—The same as breakfast.

Dr. Perks gives his personal experience as follows:—"I reduced my consumption of flesh to a minimum (an average of one pound a week), with the result that the periodic headaches, spells of mental depression, and slight attacks of muscular rheumatism, from which I had suffered for some years, gradually ceased to trouble me. Nearly three years ago I adopted an absolutely non-carnivorous diet for ethical reasons. The results have been more than satisfactory; 'uric acid' symptoms no longer trouble me; I have gradually experienced a sense of general well-being, health, and energy which recalls my boyhood's days." The sense of fatigue after arduous muscular exertion is very much less than formerly, and the severe colds from which he suffered in winter are very much mitigated and much more speedily cleared away. "I am acquainted with at least twenty abstainers from flesh food within a radius of twelve miles (including two medical men, architects, lawyers, etc.) whose experience has been substantially

the same as my own, and whose consciousness of the improvement in their physical well-being is such that they unanimously declare that they will never return to their former diet." [23]

Dr. M. L. Holbrook, M.D., Professor of Hygiene to the New York Medical College, writes: [24]—"Professsor Voit, one of the most eminent German physicians, says: 'I see no reason why man, with well-chosen vegetable food, needs to go to the animal kingdom for albuminous matter.'"

In the summer of 1872 the rails of five hundred miles of broad gauge were changed to narrow in two weeks. About three thousand men were employed from 4 a.m. to 9 p.m. The fare was bread, cheese, cocoa, bacon, and $1\frac{1}{2}$ lb. oatmeal daily, as thin gruel sprinkled with sugar. The men liked it exceedingly. No alcohol was allowed. Not one man was sick.

The following points are from a pugilist:—Breakfast—small piece of fish (*no* flesh), well-cooked oatmeal, mush and milk, and fruit; no coffee or tea. Supper light. Hot water when desired. Roast meat for the second meal.

"Of my eight children, four that were raised at home, while I was with them and could enforce their having an oatmeal and milk breakfast and light supper, grew up strong, and are alive now." The other four died young.

Gofio, the chief diet of the Azores, is grain roasted brown, then ground to fine flour. Maize and wheat mixed is best. The inhabitants are exceedingly well developed and capable of doing hard work.

Dr. Hemmeter, M.D., Philos. D., Professor in the Medical Department of the University of Baltimore,

writes to the following effect:[25]—Physical exercise, bathing, or training immediately after meals is not to be advised. . . . Reading or writing after meals may be harmful for three reasons—because it compels a wrong position of the body; because of possible compression of the stomach; and because of mental exertion.

All emotional excitement after meals is hurtful, and it is best not to eat at all if the mind is occupied with some distressing thought. All gastric sufferers in whom neurasthenia is a feature should rest after meals.

A large number of men of high intellectual capacity are gastric sufferers. This comes from the universal abuse of the mental energies while overtaxing the digestive organs. Dyspeptics ought not to read their mail or papers before meals lest their appetite should be affected. Many gastric atonics are caused by an overwrought nervous system. This one, almost universal habit of overtaxing the brain and nerves is a more dangerous and frequent cause, lying unknown and unrecognised at the foundation of many incipient gastric diseases, than all others put together.

. . . "From a great many observations which I have made on persons living at hotels, etc., I have concluded . . . that the average American in the better classes of life eats entirely too much. . . . When sickness comes on, the common error is frequently made to introduce more food, if possible, than in health. . . . The excess of good food and wine in our modern treatment of disease is as pernicious as the bleeding, vomiting, purging, and sweating of our medical ancestors."

Dr. Hemmeter then proceeds to make some very

valuable suggestions based on actual trial on himself and others.

He advises for persons who suffer from headaches, bilious attacks, dyspepsias, debilities, or from similar less severe disturbances of nutrition (and while to some degree approving of the no-breakfast plan), that supper or the third meal be left off. Dinner, the last meal, is at 2 p.m. Resting the stomach will enable it to do much better work, and leads to a keen hunger otherwise unknown, and in some cases where food was previously deficient the actual quantity eaten daily is increased. "The two-meal-a-day plan is one of the most effective means of combating intestinal flatus, which arises from undigested residues." "It is quite conceivable that persons may be in a state of starvation, not from want of food, but from the fact that the digestive capacity is constantly overpowered with excess of food."

Mr. Evans, M.R.C.S.E., surgeon to St. Saviour's Hospital, places fruits and nuts first for their fitness to promote health and long life, animal foods are placed second, vegetables third, and last, and worst, are placed the pulses and grains, which, from their excess of earthy salts, are of all foods most likely to induce ossification of the joints and tissues, thickening of the arteries, and consequent premature old age.

Moderation in quantity of food is the distinction (amid all varieties) of long-lived people.

Miguel Solis, an extremely old man (*reputed* to be 180) in Spanish territory, attributed his long life to his careful habits, eating only once a day. He fasted on the first and fifteenth day of every month, drinking on those days as much water as possible. He chose the most nourishing foods, and took all things cold.

This man ate meat only twice a month. The authority for this is Dr. Luis Hernandez.

According to Dr. Evans, his abstemiousness and use of large quantities of water appear to have dissolved those "earthy compounds" which cause premature old age in so many cases.[26]

Dr. Hadwen, of Gloucester, a vegetarian for twenty-three years, said he found the diet the finest thing for health under all conditions and temperatures. He had worked exceedingly hard with body and brain all that time. His children had done very well on the same diet, one now being twenty-two. He had "found vegetarianism answer well in every case." He had persuaded his father and mother to abstain at over sixty ; they were now eighty-two and eighty-six. She was now upright and strong, with raven-black hair, and all her faculties, at eighty-six. He had tried vegetarianism on all his patients, and had never found it fail. He would banish every kind of alcoholic drink.[27]

Dr. J. A. Paris, M.D., F.R.S., wrote in 1837 :[28] "It would appear, however, that although man is capable of subsisting upon almost every variety of food, he cannot bear with impunity a sudden and abrupt transition from one species to another. This fact was very strikingly exemplified in the eastern part of France in the year 1817, where the failure of the crops occasioned such a famine that the poor were compelled to feed upon such vegetable productions as could be obtained ; the consequences are stated to have been general anasarca, . . . and a permanent loss of strength ; the sudden return even to barley bread, after this miserable regimen, was not unattended with danger." Similarly,

according to Ariceuna, after a famine at Bokhara, many of those who had lived on roots and herbs, and retained their health, became diseased as soon as they returned to a full diet of bread and flesh. [A recent instance occurred in South Africa, where about twenty natives out of some hundreds who were supplied with a large amount of flesh, as an experiment, by mine-owners, died, and many others were ill.] After the retreat of Sir John Moore's army, many who had survived all hardships died from the liberal fare on which they were regaled when they reached home.

Spallanzani has shown that a pigeon may be made to live on flesh, an eagle on bread, etc.

Horses have been fed on fish, and on boiled flesh, mixed with grain.

Fresh-water mollusca suddenly transferred to sea-water die, but by gradual additions of salt to water until it reaches the strength of sea-water they will not sustain injury.

A highly intelligent gentleman in France wrote to Dr. Paris that the work done daily by a French labourer is about equal to that of an English labourer, but that he takes more time. By giving them meat and wine they may be got to do more work. [This is probably owing to the insufficiency and *meagre* character of the French workman's diet early in the nineteenth century.]

Dry toast and barley water make a good breakfast for the prevention of acidity. After the lapse of two or three hours, cold mutton or some other easily digestible meat may be eaten. This answers for luncheon, and often the regimen indicated has a wonderful effect in the improvement of health. A merchant informed

Dr. Paris that the evil was completely removed by adopting this light breakfast and luncheon, and he felt ten years younger. His breakfast was barley water and milk and a biscuit; lunch two hours later, a chop (and probably bread); a good dinner at six.

"Physicians entertain but one opinion" as to the hour at which invalids should dine,—the middle of the day.

It is very important that persons of slow digestion—and they are numerous—should not have less than five or six hours between meals.

"A person in robust health," as after training, "should diminish the proportion of his food," else he will get some disease. It is extremely important after illness not to eat too much, but gradually to return to a moderate amount of sustenance.

"Under any circumstances, the quantity of liquid taken during a meal should be small."

"Both theory and experience demonstrate the advantage which attends a liquid repast about four or five hours after the solid meal."

The invalid or dyspeptic ought never to eat much when tired.

"The use of chocolate, butter, cream, sugar and rich sauces, without a due admixture of bread, potatoes, and other less nutritive aliments, is invariably attended with disordered digestion."

Pulses, such as lentils, beans, and peas, should be eaten sparingly by persons of weak digestion; they are not very easily digested, and are apt to cause flatulence. Peas, when green and young, are a wholesome food.

Chestnuts form the chief food of the lower orders in the plains of Lombardy.

It is decidedly expedient for persons of weak digestion *to eat but one species of food* at a meal.

"As a common beverage, chocolate is highly objectionable"; "it oppresses the stomach."

Dyspeptics, Mr. Abernethy advises, should rest one hour after rising, then breakfast, rest three hours, then have active exercise for two hours, rest one; then, taking their dinner, they should rest for three hours, exercise two, rest one, and then take their third (slight) meal.

Dr. Paris strongly urges the advantages to be derived from *digging*; it is "highly salutary in dyspeptic affections." Regularity of meals is at least as important, in Dr. Paris's opinion, as the quality of the food.

Dr. Keith, in his book on *Sanitary Matters*, published in 1900, gave a wholesome warning against the ordering of milk "in huge quantities" to middle-aged and old men. Though in some respects an improvement on excessive flesh food, milk is not wanted by old people, and may cause mischief.

Herr Lahmann wrote: "Though in this kingdom we most of us eat plenty of vegetables, yet those vegetables have been deprived of almost all their valuable food-salts before they reach us." The salts are almost entirely boiled away.

Our ancestors, says Dr. Lahmann, breakfasted on porridge, the most nutritive of cereals; we substitute a miserable roll and coffee. They ate for dinner whole-meal bread and vegetables; to-day meat forms the principal dish, and potatoes replace other vegetables and whole-meal bread. Coffee and tobacco, "the most dangerous of nerve poisons," are indulged in after dinner. Milk and whole-meal bread formerly provided

a sufficient supper; innutritious bread, beer, wine, tea, etc., are substituted by us, with ill effect on bodies and nerves. These stimulants should properly only be used on special occasions. He recommends uncooked or steamed vegetables (leaf); when the natural salts are thus retained the harmful common salts may be dispensed with, and the flatulence resulting from cabbages cooked in the ordinary way may be avoided.[29]

In answer to questions addressed by the editor of a vegetarian paper to medical men, the following were some of the replies to the inquiry whether men may live in full health and vigour on a carefully selected dietary from which flesh food is excluded. It may be assumed, however, that many, perhaps a majority of, medical men now are in favour of some flesh food as they were sixty years ago in favour of alcohol:—

"Yes."—Dr. H. H. S. Dorman, M.D.

"Yes."—Dr. H. S. Purdon, Belfast, M.D.

"Yes, it is possible. . . ."—Dr. Jonathan Hutchinson, M.D., F.R.S.

"I have lived on a strictly meatless diet for the last ten years, and have been greatly benefited by this régime. . . . We cure some diseases hitherto considered incurable."—Mr. A. F. Reinhold.

"I have no doubt of this, and I speak from twenty-one years of careful, studious observation of my own experience and that of hundreds of sick and well persons in all climates, from the tropics to Canada, with whom I have conferred."—Robt. J. Osborne, M.D., New York.

"I do."—R. Greer, M.D., Chicago.

"Yes, unless they do hard work at high pressure;

provided that milk, eggs, and butter are allowed."—G. Symes Thompson, M.D., London.

"Certainly."—John Beddoe, M.D.

"Of course I do."—A. Rabagliati, M.D.

"Yes."—W. W. G. Stables, M.R.C.S.

Dr. Sims Woodhead, M.D., F.R.S., has not the slightest hesitation in saying that men may and do live in full health and vigour on a *carefully selected* dietary from which flesh food is excluded.

Others are in favour of a reduction of flesh food, and a larger use of vegetables and fruit.

Dr. George Black, of Edinburgh, has given the following opinion: That a fruitarian diet is sufficient to maintain the body in its highest degree of health and vigour, and that this is so in all circumstances of climate and occupation. It is best for the young, and the best possible for early manhood and womanhood. "In old age nothing is more conducive towards warding off decrepitude, nothing more calculated to preserve physical and mental vigour."

Mr. C. J. Harris, M.R.C.S., from personal experience of six years, gives positive testimony to the value of the natural diet, excluding even eggs, milk, and cheese. He rode 108 miles on his tricycle in one day at the age of seventy-nine, was "strangely well in every respect," and free from rheumatism and gout.

Dr. John Wood wrote that he "has been particularly struck with the marked improvement that has taken place in those of our domestic servants who have adopted our mode of living. In several instances where, prior to their making the change, they were subjects of dyspepsia, anæmia, and neuralgia, complete recovery has followed." He has seen beneficent results

in patients suffering from rheumatism, gout, skin affections of gouty origin, and other allied diseases at all ages. Increased strength and ability to bear fatigue have been in several instances remarkable. He feels strongly the wrong done and the injury inflicted by urging children to eat flesh food.

Mr. Fleetwood-Taylor, M.B., advises entire abstinence from flesh foods, and strict moderation; the use of nuts, fruits, whole-meal breads and biscuits, succulent vegetables conservatively cooked, a little cheese, and milk.

Herr Kuttner (*Berliner Klinik*, Jan. 1902) advises a vegetarian diet, including milk, butter, cheese, honey, and eggs, for dyspepsia and intestinal affections of nervous origin (brilliant results in these), idiopathic neuralgias, as well as those having a gouty basis, headaches, and other disorders dependent on constipation in neurasthenic, hysterical, and epileptic patients, cases of abnormal irritability of the heart arising from emotion, etc., insomnia nervosa, urticaria, etc.

The following lacto-vegetarian diet is recommended: —Breakfast—cup of sweet milk or cocoa, bread and butter, and for constipation cases, fruit jelly, honey, or fresh fruit. Second meal—rice, lentils, etc., milk or kafir, bread and butter. Other meals—soup of fruit, milk, vegetables; macedoine of fruit, a bowl of buttermilk, egg cakes, pancakes, etc. Butter, cheese, eggs, and potatoes may be included in one or more of the meals.

Dr. Albu [30] recommends a purely vegetable diet in functional nervous diseases, neuralgia, neurasthenia, gastro-intestinal neurosis, chronic constipation, gout, cardiopathics, and many dermatoses with nutritive disturbances and dyspepsia.

A very useful letter is contributed by a medical man to a magazine.[31] In the course of it he states that: People who have suffered from gout or rheumatism have a tendency to revert to it when they eat acid fruit. They may suffer from dyspepsia connected with the digestion of starch. Those persons who have had gout or rheumatism are always afterwards liable to a recurrence on slight provocation, such as the use of unsuitable food, like starch and fruit together. No meat-eater or tea-drinker of twenty or thirty years standing can attain the immunity of abstainers from an early age. It is important for these sensitive organisations to keep warm, and to abstain from the fruit, acid vegetables, etc., which affect them. "I have always believed that man's natural diet is one of nuts and fruit, which contain practically no starch. People who live thus can generally take fruit with impunity. . . . The other way is to adopt a diet of milk, cheese, potatoes," etc. "The acidity of a nut and fruit diet is not very great, but the acidity of a bread and fruit diet is very great." "The man living on a uric-acid-free diet who eats bread, milk, cheese, and adds to these only a very little fruit, at once begins to retain uric acid." With such guidance "very much relief can be obtained in nearly all cases."

Dr. Jablonski concluded, as the result of his experience, that vegetables ought to be the basis of regimen in irritative, plethoric, and above all, gastro-intestinal affections.[32]

Dr. R. E. Dudgeon, M.D., writes:[33] Halophagists, as those who indulge to excess in salt are called, are subject to various diseases, among which may be mentioned catarrhal affections, some skin diseases,

chilliness, emaciation, and urinary disorders. Prolonged use of salt meat is a source of scurvy.

Oatmeal has, besides its known excellence as a food for brain, teeth, bone, and muscle, a most wholesome action on the kidneys. Peas, beans, and lentils are a much more sustaining food than wheaten flour. Esau's pottage was red lentils.

Vegetarian diet is quite as nutritious as animal food.

"A pound of beans is equal to 4 lb. of beef," according to experts.

"Dogs, which have purely carnivorous teeth and intestines, are often fed by their owners on a strictly vegetable diet," and thrive upon it. The dogs of St. Bernard Monastery eat no flesh. They are fed chiefly on soup of meal, biscuits, and bread. (*Vegetarian*, Oct. 1898.)

Dr. Rae, in his first expedition to the arctic regions, took alcohol with him to protect his men against the effects of cold. But he found, as he told Dr. Dudgeon, that those men who drank alcohol were very severely attacked by frost-bites, while those who abstained were always fit for the hard work they had to do. So in his later expeditions he took no alcohol, and his men remained healthy and strong in the severest weather.

Dr. Wallace recommends abstinence from fish, flesh, fowl, alcohol, tobacco, mineral waters, salts, baking powders, pickles, unripe and overripe fruits, artificial food compounds, black coffee, tea drawn for more than three minutes, unboiled milk, unboiled water, and drugs.

He recommends the use of whole-grain meal, fruit,

nuts, lentils and other pulses, vegetables, and appropriate vegetable oils or butters. There is a large body of testimony from supporters of the society with which he and Mrs. Wallace are connected, of the great increase of health and vigour, and the freedom from illness, of persons who adopt such a diet on the right lines.

The author of the *Catechism of Health* says: "Honey is a never-failing disturber of the stomach or bowels. To some it is a positive poison. Those who in the least degree suffer from disease of the digestive organs should never touch it." On the other hand, he says, a few persons in health may eat it without harm.

Sir John Pringle, however, and others, especially ancient authors, have highly praised honey for the aged. It seems as if the ancient bodily constitution was more tough than the modern.

Dr. Abernethy recommended: for *breakfast*—bread and butter 4 oz., liquid 8 oz.; for *dinner*—bread and vegetables 2 oz., fish 7 oz., light wine or malt liquor 6 oz., water 2 oz.; for *tea*—bread and butter 3 oz., liquid 8 oz.; for *supper*, nothing. Total, 16 oz. solid, 24 liquid.

Tea, excessive in strength or quantity, causes (like foxglove) watchfulness, palpitation, fainting, nausea, etc. Coffee, when strong, impairs the digestion, and causes tremors and nervous disorders.

"Eggs and tea or coffee mix very badly and cause indigestion."

In Dr. Martin's article on "Food" in the *Treatise on Hygiene*, I find the following observations:[34]—

"Oatmeal is a valuable food, as is evidenced by its extensive use among the Scotch peasantry."

"Uncleaned or partially cleaned rice is in use among the peasantry in India and Burmah.

"When rice is taken, salt has to be added to supply the deficiency of mineral food-stuffs, meat or peas or beans to supply the deficiency of proteid, and animal fat (butter, etc.) to supply the fat necessary. The cooking of rice is important, it should never be boiled but steamed, so that none of the proteid is lost.

"Rye is a very nutritious food; in composition, it closely resembles wheat." But a larger proportion of the proteids of wheaten bread than of rye bread is absorbed, and it is therefore to be preferred. (*G. Meyer, quoted by König.*)

Maize flour is a very nutritious food. It is not, however, to be compared to bread of wheat flour for digestibility, except to persons accustomed to it. It is best taken as a porridge, made either from corn flour, oswego, or the ground whole maize. The corn flour contains a smaller percentage of proteid.

The leguminous seeds, such as peas, lentils, and beans, are rendered more digestible, in their dry state, by grinding and mixing with milk, butter, etc., in the cooking.

The disordered digestion arising from the abuse of tea and coffee has been ascribed to the tannin in the infusion. There is, however, no evidence of this. . . . It is not clear what constituent of tea and coffee is the active agent in producing dyspepsia. On the side of the nervous system coffee and tea may lead to sleeplessness and restlessness; in some people such symptoms are noticed even if the beverages are not taken in excess. Tea ought to be infused "for three minutes only."

Dr. J. B. Thomson, writing in 1868, spoke in favour of a diet into which meat entered very sparingly, and which contained instead a moderate amount of milk. His experience of this regimen had been for ten years.[35]

Dr. Guy, from his observations on English prisons, stated that "we possess conclusive evidence of the sufficiency of a diet from which meat is wholly excluded, and even of a diet consisting wholly of vegetable matter."[36]

Dr. H. S. Brewer, in his *Alkaloidal Clinica*, observes: "The veins and arteries in meat-eaters are gorged and dilated, and fever is almost always present."

Dr. Henry Purdon gives this evidence: "I have known persons who, after adopting the vegetarian practice of diet, recover their health and no longer suffer from such complaints as indigestion, constipation, gravel, gout, fits, etc. Moreover, I believe that a strict vegetarian is less liable to ordinary disease than a beef-eater. For example, John Howard, the philanthropist, was a vegetarian, and visited with impunity jails and other places where contagious diseases were prevalent."[37]

Dr. W. M. Holbrook, of New York Medical College, writes: "In Bright's disease, a plain nutritious vegetable diet, including milk, is preferable. In rheumatism, a vegetarian diet will, in most cases, give great relief, and other hygienic measures will complete the cure, where cure is possible."[38]

The American *Medical and Surgical Bulletin* affirms that "there are more than a thousand distinct diseases described in our books, but they all spring from the violation of only a few of Nature's laws."

Dr. Robertson Wallace, writing in 1904,[39] says: "Good food, the avoidance of stimulants, free ventilation of the bedroom [and of the workroom], exercise in the fresh air, thorough flushing of the whole alimentary system with pure water, and a daily bath or dry rubbing, will do far more than any of the latest fashionable drugs to keep a girl in health," etc.

And for a man: "A little soup, a morsel of meat and vegetables, or a piece of fish, a sweet, and a bit of cheese, is dinner enough." Gout, rheumatism, appendicitis, poisoning of the nervous system, eczema, kidney and pulmonary troubles, bronchitis, pleurisy, and pneumonia are apt to be caused or helped to form through excessive loading of the digestive organs.

Dr. Gordon Stables wrote in 1903:[40] "Virtue depends far more on the health of the body than on church-going. . . . I should like to see every church in the kingdom open on every week-day, so that one could often drop in when tired and sad, and sitting alone, receive that comfort that God-aided self-communion never fails to bring. . . . The laws of Nature tend towards tonicity and happiness. . . . Do you know that it would do most people a world of good to fast one day in the week, and live abstemiously all the other days? Do you know that two meals a day are ample for almost any one not actively engaged in hard outdoor life and exercise?" On the fasting-day, say Friday, "Stewed prunes, grapes, and a little weak tea for breakfast; fruit alone for dinner, with biscuits, and, if needed, a tumbler of claret"; or, "a little fish, but no meat on any account." On other days, a little stewed prunes or apples before breakfast, and a glass of hot water with half a lemon

in it, about half an hour before breakfast. Pure water and a little fruit about 1 p.m., then a light meal at 6 p.m. Elsewhere[41] he wrote: "I myself am a brain-worker and a hard worker, and I would be neither so strong nor so well if I did not use oatmeal."

Dr. T. L. Nichols, M.D., wrote some years ago:[42] Tobacco is an acrid poison, absorbed into the blood, and resting upon the brain and nerves, first exciting and then dulling their sensibility, and finally [in excess] stupefying and paralysing. . . . Tea and coffee are stimulants only, and their influence upon the body is either inappreciable or hurtful. Strong decoctions of either stimulate the brain and nerves, produce overaction, and, by concealing fatigue for a time, allow us to overtask our powers, until we bring on dyspepsia, neuralgia, softening of the brain, paralysis, apoplexy.

Spirits have no nutritive value whatever. Enormous quantities of good food [grapes, grain, etc.] are converted into poison, and that which should support life is converted into a potent cause of disease and death.

The best human food I believe to be wheat. It has long been known by experience that brown bread, honestly made of whole wheat, and not the refuse of millers and bakers, is sweeter and much healthier than white bread. Wheat boiled or steamed till quite soft, so that it cracks open, and eaten with a little sugar and milk, or syrup, is excellent and delicious. Every family should have a steel coffee-mill for grinding wheat; fresh-ground wheat makes a capital dish.

Indian corn or its meal, in mash, cakes, pudding, etc., has great value as food.

The Scotch and Irish people have lived on oatmeal and milk almost entirely.

Rice is the staple food of hundreds of millions. It should be eaten with butter, oil, milk, or fruit.

Beans, lentils, and peas have a very high food value ; a pound of split peas has more nutriment than three pounds of beef or mutton. All these are known by labourers to sustain the muscular strength to an extraordinary degree. The favourite food of American timbermen is bean porridge.

The Spanish peasant dines heartily and satisfactorily on a piece of bread and a raw onion, and is at least equal to an English labourer, and generally in better condition.

Cardinal Manning's ordinary meal was a piece of bread, biscuits, and water.

Bread, milk, and fruit form a perfect diet at all times.

"I had a patient, a hopeless dyspeptic, who in twenty-one days ate only half a peach, with no other food. At the end of three weeks she could eat without distress, digested her food, and was cured of her long and painful illness."

There is no cure like the "hunger cure."

Health is the condition of industry, of usefulness, of all comfort and enjoyment, and health depends upon pure air, cleanliness in every respect, healthy food and pure water, and temperance.

Dr. Nichols made an experiment of economical living for four weeks in November 1878, his food being in the first week, chiefly brown bread, oatmeal, milk, pea-soup, pudding, grapes, potatoes, onions, roast corn, figs, omelet, varied every day ; the cost was 5$\frac{3}{7}$d. per

day. In the second week, bread, milk, and fruit, and a little cheese—cost, 5¼d. a day. In the third week, porridge, brown bread, milk, potato, apple, Brussels sprouts, rice, polenta, cheese, fruit—cost, 3d. a day. (A dinner in this week of baked potato, bread, butter, cheese, and fruit pudding cost 1¾d.) In the fourth week, bread and fruit pudding, maize, sugar, wheat porridge, apples, peas, oatmeal, bean soup, fruit—cost, a little over 2d. a day.

The result as to weight was—no loss till after the third week, when an extra diminution of food caused a loss of 2 lb. in weight, from 12 st. 2 lb. to 12 st. As to health, a decided improvement.

A family might live very well as follows:—On a soup, eaten two or three times a day, composed of—barley 8 oz., peas 6 oz., potatoes 24 oz., bread 8 oz., sweet herbs, salt 1 oz., water 80 oz. or 4 quarts, at a cost of 5½d.

The barley and peas need boiling until well cooked, over a slow fire, the potatoes, herbs, bread, etc., and a little butter and brown sugar if required, may then be added. And, of course, any appropriate vegetables, according to the season.

Dr. Haig in his book, *Uric Acid in Causation of Disease*, mentions that Sir W. Banks attributes the increased cancer death-rate largely to "richer and more abundant food," of which males eat more than females.[43]

"We now not only eat more meat, but are in a far worse condition for eliminating uric acid."[44]

A recent report by the medical officer of the Scottish Widows' Fund shows a very decided increase in deaths from such diseases of uric-acid origin, as Bright's disease and cerebral hæmorrhage, which, with bronchitis and

heart failure, constitute four-fifths of the diseases treated of in this volume. The increased death-rate from these diseases runs parallel with the increase of that from cancer, and with the increased consumption of flesh.

In London and the Thames valley, where the cancer rate is high, the consumption of flesh and rich foods is also high.

In Kerry a potato, buttermilk, and Indian meal diet has prevailed; the cancer death-rate was only 2·76 per 1000, while that of Armagh, with a mixed and animal diet, was over 10.

But bacon and tea are now largely used in Kerry, and apparently are responsible for some of the increase of cancer mortality in recent years.

In India, pulses (uric acid forming) may cause a certain proportion of cancer cases. [May not the highly seasoned curried dishes be also a cause? They are too strong to be tolerable to most Europeans.]

Salt, like metals, lead, and silver, hinders the elimination of uric acid. Uric acid is a local irritant.

Mr. Moore of the Middlesex Hospital says cancer is "eminently a disease of persons whose previous life has been healthy, and nutritive vigour gives them otherwise a prospect of long life." It is the vigorous who tend to retain uric acid.

Flesh and tea are a cause of the retention of uric acid. Commercial travellers, butchers, and plumbers are subject to cancer, owing to diet and to absorption of lead.

Gout is known in Persia, where only the rich eat flesh, as the rich man's disease.[45] Anæmia, migraine, and acute rheumatism are also produced by an excess of flesh diet.

Uric acid is met with in excess in the body and blood chiefly from three causes—(1) Excess of [flesh] meat, eggs, fish, pulses, mushrooms, asparagus, tea, coffee, cocoa, and guarana, which contain it or members of the xanthin group equivalent to it; or (2) because so much nitrogen is taken that the uric acid formed out of it in the relation to urea of about 1 to 35 is not all excreted, and a store is formed in the body of possibly 52–400 grains in a year; (3) because animal food increases the introduction and formation of uric acid and prevents its elimination; similarly the action of tea, coffee, pulses, etc. No animal food at all is necessary.

A proportion of 3·5 grains of urea per lb. of body weight, as stated in most works of physiology, is a fair amount for a healthy and active man.

Children perhaps require three times as much, old and sedentary people much less.

The albumen required is estimated by multiplying own weight in pounds by 3·5 and the product by 3; the figure obtained is the weight in grains of albumen needed.

Oatmeal contains 3·4 grs. of purin per lb., cereals 2 to 4 grs. of xanthin, pulses 16 grs., tea 175 grs.

With the increased use of tea and coffee, there is a very great increase of uric-acid disease throughout the land.

Dr. Haig concludes that flesh-food is unnatural, and that tea [and coffee] is a poisonous stimulant. That salt is bad for uric-acid trouble, and causes the body to feel cold much more, also causes nasal catarrh. That bread-stuffs and cereals form the best diet. That seconds flour is the best. That bread, fruit, and vegetables, with a *little* cheese or butter, are non-

constipating. That oil and butter are very useful. That toast, roasted biscuits, potatoes and oil, and dry fruit make a good meal. That the athletes of Greece and Rome subsisted on some such diet. That bread and toast should be eaten dry, and well chewed, to avoid flatulence. That no one should drink when not thirsty.

Dr. Burney Yeo recommends China teas as much more wholesome than Indian and Ceylon, which contain a much larger amount of tannin.

"For constipation brown or rye bread, fresh vegetables, spinach, sorrel, beetroot, watercress, salads, plainly boiled Spanish onions, ripe fruits, should form a regular part of the diet. . . . The amount of animal food should be limited, and the proportion of vegetable food increased." "An excess of eggs, milk, and farinaceous food must be avoided." "Maize and oatmeal are slightly aperient." "A due proportion of fats and oils is also beneficial." A dessertspoonful of olive oil may be mixed with potato, beetroot, or other vegetable."[46]

Many local epidemics have been caused by the diseased or infected flesh of animals. An interesting example is described by Sir J. Crichton Browne,[47] which occurred at Derby, and "was investigated and cleared up in a masterly manner by Dr. Howarth and Professor Delépine." A great number of similar attacks are probably due to similar causes. The outbreak at Derby was found to affect persons who had eaten pork pies from a certain shop on 3rd September. On 19th September Dr. Howarth had particulars of 131 cases in Derby, and 90 cases outside, two of which proved fatal. Cases occurred in London, Uttoxeter,

Cheltenham, Taunton, Devonport, Sheffield, and Leeds, all from pork pies purchased in Derby. The shop, with its slaughter yard, was above the average in its arrangements, but there were many sources of danger, and it was ultimately shown that the chopped materials for the pies were liable to infection in the yard, where the intestines of pigs for "chitterlings" were scrubbed. The bacillus from the intestine of an infected pig would, on falling into the pie material, multiply with enormous rapidity, and experiment showed that the baking for an hour of the pies did not heat their interior sufficiently to kill the micro-organisms. The diseased intestine of the pig, thus infected with great severity the consumers of the pig pies.

In the fatal epidemic of pneumonia at Middlesborough in 1888, samples of bacon bought in the district gave pneumonia to a large proportion of mice fed on them; "it seemed clear that this fell disease could be spread by means of infected food."

The condition of many bakehouses, especially of those which are underground, is quite scandalous, and must be productive of much disease. Dr. Newman, of Finsbury, found by careful researches that the proportion of CO^2 was 14·8 in the bakehouses, and that their air contained at least four times more bacteria than the air of the street. Fifty-four per cent. of the deaths of bakers were due to lung disease. The spread of tuberculosis from consumptive bakers, who handle the loaves, ought to be guarded against. It is a very considerable danger to the public. Many bakehouses, we may add, are liable to typhoid pollution from the defective closets opening into them.

In bakers' and grocers' shops I have found in every

part of the country the practice of wetting the finger in the mouth before putting rolls or biscuits in a bag, and frequently the finger is wetted before the goods are taken up. The attendants seem to be wholly and fatally ignorant of hygiene.

Rheumatism, cancer, gout, consumption, diabetes, and epilepsy are considered by many observers to be much favoured by excessive flesh-eating, and some of these are cured by abstinence.

Dr. Lambe, Dr. Pavy, and Dr. Haig have borne valuable testimony to the effect of a vegetable and fruit diet in curing rheumatism and gout.[48]

Dr. Pavy mentions that Mr. Thomas Wood, reported upon to the College of Physicians by Sir George Baker, sustained "a remarkable degree of vigour" for more than eighteen years upon 16 oz. of flour made into a pudding with water, no other liquid being taken.

Dr. Haig affirms[49] that the first requisite for strength and power of endurance is a satisfactory and sufficient supply of albumens; the second is a free circulation through the tissues to bring them albumens and remove their waste products, and this circulation is only possible in the comparative absence of uric acid from the blood stream. Dr. Haig excludes flesh and eggs from a healthful dietary, and recommends the following foods as free from uric acid:—(1) Milk and milk products; (2) the pulses; (3) bread-stuffs; (4) nuts and nut foods; (5) garden vegetables; (6) garden fruits; (7) dried and foreign foods.

He places dairy products in the first rank, and has a high opinion of the cereals. Garden vegetables, such as potatoes, are deficient in albumen, but are useful with the more albuminous foods, such as milk, cheese,

and pulses. Nuts are valuable, but have disadvantages. Pulses should be sparingly used, 2 oz. daily being sufficient for most people. Garden fruits are useful in addition to albuminous foods. Dried fruits have a higher albumen value. He concludes that it is possible to live on (1) alone; also on all the rest, excluding (1) and animal products entirely, and relying chiefly on (2), (3), and (4); that it is not possible to live on (5) and (6) alone, and generally in this country not on (7) alone. "A diet which includes all or nearly all of these groups in its day's cycle is the best."

The United States Department of Agriculture has been carrying on an investigation as to the value of foods, and their results show that fruits and nuts should be considered as true foods, rather than as food accessories.[50]

The subjects for experiment were two elderly men, two university students, two women, and three children. The men all did hard manual labour during a part of the time, the students working to support themselves during their studies. The fare included apples, tomatoes, honey, bananas, centaloupe, grapes, verdal, Tokay, muscat, haws, pears, pomegranates, persimmons, oranges, strawberries, melons, figs, almonds, and peanut butter. Small quantities of cottage cheese and eggs were allowed.

In the annual report of the Department of Health of Chicago for 1894, I find that the following diseases had diminished since 1861:—Consumption, croup, diarrhœa, diphtheria, dysentery, malarial fever, measles, puerperal fever, scarlet fever, typhoid, whooping-cough. Most of these diminished as a result of sanitary administration and improvements. It is observed that the

sterilised milk charity did much to save child life. That the new water-supply from the four-mile tunnel in the lake reduced the mortality largely; in three years the typhoid mortality fell from 11·5 per 10,000 to 3·1 in 1894,—the diarrhœa from 1951 (annual average) to 604. The typhoid rate, which had been the highest of all American cities, now took the tenth place out of seventeen; 65,000 cases of non-fatal illness were considered to be saved, and lives of an estimated value of $10,765,000.

The following diseases increased since 1861:— Nervous 80 per cent., Bright's 84, cholera infantum 123, pneumonia 160, bronchitis 330, heart 360, cancer 812.—*Accused: The High Tension of Modern Life.*

In a very recent official report (1904) on insanity in Chicago, the greatest beast-killing and pork-packing city in the world, Dr. Podstata, the superintendent of the insane asylum there, states [51] that Chicago contains one insane person for every one hundred and fifty of the population, that the percentage has quadrupled in the last fifty years, and is increasing at the fastest rate in the world. In five hundred years, if present conditions are maintained, half the Caucasian race would be mentally wrong, and in two hundred years our present civilisation would be obliterated.

In the new edition of Quain's *Dictionary of Medicine*, Dr. Frederick Roberts, the author of the article on "Gout," states that this disease may be originated *de novo*, or an inherited tendency may be considerably aggravated, by certain errors of diet and habit. "In general terms, these errors may be summed up as excessive eating, especially of particular articles of

food; undue indulgence in alcoholic drinks; and indolent habits, with insufficient exercise. The gouty diathesis is chiefly promoted by foods which are rich in nitrogenous elements, and especially lean meat." Undue consumption of sugar, starchy foods, and several kinds of wine and strong malt liquors, contributes to produce gout.

These views are generally held by the best medical authorities.

Dr. Cheyne mentions that the Prince of Condé was cured of gout by a vegetable diet. It is wonderful, he says, in what sprightliness, strength, activity, and freedom of spirit a low—*i.e.* a vegetable—diet will preserve those who have habituated themselves to it. He gives instances. In several races the same sprightliness is often found. For instance, the Bannians with their abstemious habits, according to Ovington, in his *Voyage to Surat*, are remarkably quick-witted. The Dalecarlians of Sweden, in 1789, lived extremely well and happily, according to Dr. Sparrmann and a Dutch officer, on bread, milk, and water, and occasional herbs, or pancakes and frumenty (hasty pudding) and beer. They were "good-natured and honest beyond example, and very robust and healthy."

The *British Medical Journal*, quoting Lord Rosebery's dictum, "An empire is but little use without an imperial race," reviews Mrs. Watt Smyth's recent book on *Physical Deterioration*:—

"It is seen, therefore," says Mrs. Smyth, "from the evidence of vital statistics, that town conditions are, as compared with country, inimical to the survival of infants and young children. . . . This terrible toll on infant life means also a corresponding toll on the

health of those infants who live on into childhood." The diseases passed through "produce a lasting effect on nutrition, impairing digestion, deforming the skeleton, and stunting growth generally."

"For our part," says the *British Medical Journal*, "we are prepared to uphold the conclusion here implied."[52]

An East End clergyman remarked that the poor "are perpetually on the trudge to the hospitals with their bad chests and legs, and get patched up again and live on."

The London hospitals, according to Mr. Burdett, spent £600,000 and attended to about 1,000,000 out-patients annually. "This expenditure is incurred mainly in patching up the wretched poor." The rate must now be much higher.

Dr. Arthur Newsholme, M.D., D.P.H., M.O.H., of Brighton, states[53] that the age distribution of urban is more favourable to a low death-rate than that of rural districts. If the annual death-rate in England and Wales at each age period be applied for 1881, the death-rate in the urban population would be 20·4, in the rural 22·83. That is, *taking age distribution into account*, if the two populations were *equally* healthy, the death-rate of the town should be 4·03 below, that of the country 7·33 above that of England and Wales as a whole. Yet the town rate is much the highest.

Speaking of cancer, he called attention to the following facts:—Persistent local irritation has very commonly preceded the disease. A jagged tooth, a clay pipe, the irritation of soot, coal-tar, paraffin, tobacco smoke, are instances.

According to Dr. Ogle, the liability of chimney-

sweeps is about eight times that of males in general. In the United States, sweep's cancer is almost unknown, and open fires of common coal are little used. In Belgium, where coal like the English is used, there is almost complete immunity, but great care is taken to prevent contact of the body with the soot; in Germany, where there is also comparative immunity, the practice is to wash the body daily from head to foot.

The death-rate of males of ages twenty-five to sixty-five was as follows, according to occupation :—

	All males, 1000 (average).
Miners, South Wales and Monmouthshire	1081
,, North Riding, etc.	834
,, Durham and Northumberland	873
,, Staffordshire	929
,, West Riding	772
Fishermen	797
Stone and slate quarries	1122
Cab and omnibus service	1482
Plumbers, glaziers, painters	1169
Brewers	1361
Innkeepers	1521
Costermongers, hawkers	1879
Butchers	1170
Farmers	631
Wool operatives	1032

The health of miners is remarkable, especially when we find that about a quarter of the mortality was due to accidents. Allowing for this, they appear to be exceedingly high in the scale of health.

Comparing clergymen and ministers with publicans, innkeepers, and wine and spirit merchants, it appears that the death-rate from age twenty to twenty-five is

four and a half times as great among the latter as among the former; at twenty-five to forty-five, about four times as great; and at forty-five to sixty-five, more than twice as great.

Dr. Newsholme thinks that statistics give no adequate idea of the ravages of alcoholism and of syphilis, and believes these two causes to be more fatal than all the specific infectious diseases put together.

Diseases of the nervous system, alcoholism, suicide, gout, liver diseases, etc., are high above the average among innkeepers, brewers, butchers, and commercial travellers. As regards liver, the deaths of innkeepers are 240 against 39 in the general population.

Butchers "must be classed among those who suffer severely from alcoholic excess, the effects of which are undoubtedly enhanced by excess of animal food."

Dr. Dick wrote: The diet of the Afghan consists of bread, curdled milk, and water. [I think that now, at least, they frequently eat flesh.] He lives in a climate which often produces in one day extreme heat and cold; he will undergo as much fatigue and exert as much strength as the porters of London who are fed on flesh and ale; neither is he subject to their acute and obstinate disorders.[54]

In the *Clinical Journal*, Mr. Fletcher Beach says: "The disease, general paralysis, does not occur in weakly persons as a rule, but in those that are strong and more likely to give way to excess.[55]

In a discourse on *Food and Morals*, published by the Royal Sanitary Institute, Mrs. Hodgkinson has related very distinctly the view held by many members of the medical profession:[56]

"The nervous system, overwrought by unnatural stimulation or weakened by malnutrition, has terrible methods of avenging the wrongs upon itself and society. . . . There is no doubt that the outward manifestation of such impulses [moral aberrations] is conditioned by the body, and that degeneration, physical and moral, must be the inevitable result of failure to obey the laws of sound and simple nourishment. . . .

"It is therefore absolutely necessary that women should be instructed in the properties of the various foods and drinks in common use; in their action upon the nervous centres," . . . etc. "And the best hope of the race is that law and order should take the place of the chaos of ignorant indifference in which we have hitherto been content to leave a matter which concerns every one of us momentarily from the cradle to the grave."

In the course of a discussion at the Sanitary Congress at Manchester, Mr. South stated that much of the high mortality of young children was due to insufficient nourishment and the drunkenness of parents. Dr. Niven's statistics bear out this contention, for the chief causes of death were found to be diarrhœa, marasmus, lung disease, and unclassified diseases.

A very remarkable document has quite lately been circulated, of the highest interest and promise, advocating the teaching of hygiene, dietetics, and temperance in the common schools of the country. The memorial with this object was signed by over 14,000 medical men of the United Kingdom. A very excellent syllabus of subjects for children

from six to fourteen is appended to the recommendation.

In a letter to the *Times* of 22nd November 1904, Professor J. Clifford Allbutt directs attention to the paramount importance of considering the question of diet in all schemes of physical education. Professor Allbutt states that Professor Atwater and Professor Chittenden (well-known and very high authorities) have recently found, from an elaborate series of experiments, that excess of food absorbs a very large amount of physical energy, and that in this useless effort nitrogenous foods are chiefly concerned. Excessive starches (bread, etc.) are burned off in the lungs almost directly and at far less cost. The ordinary man eats too much. By a closer adjustment of food to work, the sum of work of which a man is capable is prodigiously increased.[57]

In the course of the Manchester Health Lectures it is contended that digestion is ruined by many different habits or errors. Bolting meals, badly cooked meals, copious draughts of water, spirits, beer, or tea, using up or drugging the saliva by smoking, insufficient chewing, depressing emotions, want of good air and exercise, are all against healthy digestion. Drunkards are always dyspeptic. Over-feeding and over-drinking are the most damaging in effect, more or less crippling large numbers of people. Young men and women employed in shops or factories, and workmen, are largely subject to indigestion, and the multitude of ills following upon it, owing to bad—that is, foolishly mistaken—feeding, hurried meals, inactive habits, or nervous strain, or the too frequent use of drinks, etc., which are properly drugs, such as tea, coffee, and tobacco.[58]

The *Daily Telegraph* of November 19, 1903, published an interview with a distinguished physician on Major Patrick Craigie's address to the Statistical Society two days previously. The wealthy classes unquestionably eat too much meat. Labouring people do not get a sufficient quantity of fresh meat. Of the out-patients at hospitals in East London, probably one-half were cases of anæmia, dyspepsia, and general debility, requiring easier conditions of life and plenty of fresh air. "Possibly the most marked condition that arises from dietary over-indulgence is that known as gout." "A large proportion of the community eat far more meat than is good for them." "It is the meat-eating classes that suffer from gout in its thousand forms." Among the poor, on the other hand, and especially women, who live chiefly on bread and butter and tea, the vast number of cases of anæmia and dyspepsia occur. As to cancer and food, he thought no connection had been made out. "Over tea-drinking is the cause of numerous evils," many forms of indigestion, also nerve derangements. Several cups of tea, or other liquid, with meals are very injurious. Stop their tea-drinking, and they speedily get better. Cigarette-smoking causes rapid and irregular action of the heart, digestive disturbances, breathlessness, restlessness, headache, general tiredness.

Dr. A. Berlyn, L.D.S. Glas., of Capetown, has written on the question of food and decay of teeth :[59] "The natives who live on soft, pappy foods are far more immune from dental caries, not only than the people who never touch this sort of food, but even than those of their own race who live partly on flesh

diet and partly on soft food. . . . Take the raw native who comes in from the kraal, who is little more than a savage, and who has never subsisted on anything but soft mealie pap. When he first comes into a civilised town from his wild state of existence, in ninety-nine cases out of a hundred he will be found to possess a perfect set of thirty-two sound, beautifully formed, milky-white teeth, free from any taint of tartar or other discoloration, and seldom if ever malformed or irregular. But examine the same set of teeth, say a year or two after the native has lived in a civilised town, partaken of flesh food (while deserting his beloved pap)—food that has been prepared by civilised people, spiced and condimented, and you will find caries and other dental troubles similar to those found in any white man reared and fed as the latter usually are. . . . Take at random 10,000 raw natives, and you will not find ten of them who do not possess perfectly formed horseshoe-shaped jaws; there are no V-palates, no overcrowding of teeth, seldom an irregularity, while the enamel is of a perfectly white colour, hard in texture, free from nodulations and pits, and forming a perfect shield to the more vulnerable structures of which the teeth are formed. The native cleans the teeth by washing the mouth and rubbing with his finger."

In the same magazine I find a report on the Neolithic skulls of Harlyn Bay, Cornwall, by Mr. J. Thornton Carter.

In Skull I. the teeth were fine, large, and regular; free from caries and tartar.

In Skull II. very fine and free from caries; palate remarkably well formed.

Among the loose teeth, of which Mr. Mallett has found great numbers, caries was fairly frequent.

An account appeared in the *Times* of October 24, 1898, of rickety and otherwise ailing schoolboys at a large public school. It was written by the doctor there. Of 100 boys between thirteen and fifteen, 39 were below average height, 53 below average weight, 68 below the average chest measurement, 63 were the subject of deformities [probably of all kinds of malformation, large or slight], 2 were ruptured, 14 had varicocele, and 22 albuminuria. A very large proportion have bad teeth or bad digestion.[60] The *Vegetarian* observes[61] that the great flesh-eating nations are those whose teeth are worst, and who, to a very great extent, have to wear artificial substitutes; the vegetarian nations, on the contrary, even where the tooth-brush is not used, have sound and excellent teeth up to old age. It is suggested that whole-meal bread or Hovis, oatmeal porridge, milk, lentil soup, and cocoa, in the place of white bread and tea, would build up the health of the young, and prevent such wretched results as those of which our public schools for rich and poor give such lamentable examples.

Elsewhere I find that "a place of interment was lately opened at Scone, near Perth, which had remained untouched for above two hundred years; and yet, to the astonishment of every one, among a great number of skeletons there were hardly any of them in which the teeth were not entire and sound." Similar observations were made on the skeletons discovered near Old Malton Abbey, and in many other places. The unsound, decayed teeth of to-day are clearly a very modern innovation on Nature's former rule.

Many scattered accounts of savage and primitive tribes, and some of races a little advanced in civilisation, report a condition of dental health which is near perfection. Most of the best teeth are found in simply living vegetarian tribes, but some carnivorous savages seem to be equally well provided. Even in Wales and Scotland within recent times there were many examples of perfect sets of teeth in old age. A Welsh gardener told me that his father had all his teeth sound at eighty. There can be no doubt that rich fare, hot drinks, excessive indulgence in "sweets," and the multiplied infectious diseases, have a disintegrating effect on the teeth. The rich, who eat much animal food, have, till lately, been the chief sufferers from bad teeth.

And the United States and British Colonies, where flesh is by far more largely consumed than elsewhere, are by far the most affected by dental troubles. False teeth are the rule in some parts of the States; there "every door is barred with gold."

Dr. George S. Keith, the author of the *Plea for a Simpler Life*, has given some useful information, in a later book, on the value of rice-meal, which is a part of the covering of the rice grains after the removal of the husk. Ordinary rice sent to England for human food is deprived of this rice-meal, but the rice-meal is imported for pigs or cattle. Used in the proportion of one part of rice-meal to four of white flour, it makes excellent brown bread. An analysis of partly cleaned rice which had lost some of the inner covering showed that the rice-meal contained 12·47 per cent. of albuminoids and 4·5 of phosphoric acid. "The meal is thus very rich in albuminoids and phosphates." [This

would go a long way in supporting the strength and intelligence of some of the whole rice-eating Eastern races.] Rough rice from Assam only contained 9·89 of albuminoids and 0·96 of phosphoric acid; picked red grain, 7·09 and 0·465. The rice-meal contains only 38·2 per cent. of starch, compared with the 52·85 and 52·7 of the rough rice and picked grain. "Parkes, an excellent authority, gives 5 per cent. as the proportion of albuminoids in the common white rice used in this country."

The value of this rice is still further reduced by cooking, and by throwing away the excess of water in which it has been boiled. In India the water used is just enough to swell the rice.

Clearly Dr. Keith agrees with those who condemn the "polishing" of rice for the English market. The polishing merely gives what is supposed to be "a pleasant appearance."

Unhappily, the natives of India, to the number of many millions, are now using "this thriftless system."

Dr. Keith alludes to the letter in the *Times* of 28th October 1898, from the physician at a large public school, giving particulars of sixty-three "deformities" found in one hundred boys examined.

In the correspondence which followed, one doctor regretted that the simple but perfect foods formerly used in the nursery and schoolroom, such as milk, oatmeal, and other cereals, are now little valued.

Dr. Keith wrote a letter to the *Spectator* in November 1898, in which he ascribed the bad state of matters to overworking the stomach by giving too much and too rich and exciting food, and expressed his apprehension that England would have to look else-

where for her leaders than to the great public schools. This letter was not printed.

"I have long known," says Dr. Keith, "that there is a very marked and progressive deterioration of our youths, and especially of the wealthy classes, and I have pointed out to parents that this is caused mainly by the unscientific system of feeding" introduced about sixty years ago. "If I may judge from what was told me by the headmasters of two of our great schools, the almost universal idea of the parents, especially of the mothers, is that the diet of their sons must be a fuller one than that necessary for the rest of the boys, and especially that they must have more butcher's meat. Till the parents can be disabused of this idea there can be no hope of any improvement. . . . Oatmeal and wheaten flour are excellent foods, and, when taken with a moderate quantity of milk, form perfect foods." Milk is not good for the aged, or even for middle-aged men, except in small quantities. The best food in excess may be almost as injurious as the worst.

Dr. Allchin, writing on "Digestion," in Quain's *Dictionary of Medicine*, states that more food than is required, and that not in the most digestible form, is commonly taken. "A habitual excess of food, at least in this country, commonly errs in the disproportionate amount of nitrogenous matter it contains." . . . "Many of the compounds resulting from the oxidation of nitrogenous matter are liable to become positive poisons in the economy when existing in excess." The kidneys and skin then become deranged. The result of excess of food is often seen in lassitude, want of energy, indigestion, headaches, constipation, skin eruptions, and feebleness of the heart's action.

In other classes, especially the poor of cities, where intoxication, under-feeding, neglect, ignorance, and debasement prevail, the consequences to the children are deplorable. Mr. Cheatle's report, about 1901, on the Hanwell Poor Law Schools, showed that, of 1000 children, 520 were not good in hearing, 335 had been the subject of discharges from an ear, 88 had chronic suppuration, and 434 had adenoids.

It has been calculated, said Sir James Crighton-Browne in 1902, that an entire day's diet of tea, bread, and butter on the one hand, and of porridge and milk on the other, gives a balance in favour of the latter of 22 grms. of proteid, 32 grms. of fat, 100 calories, at a cost of 4·5d. against 5·2d. for the tea, bread, and butter. "Unhappily, porridge and milk have lost their former firm hold on Scotland as its standing dish."

He then stated his conviction that by securing an adequate supply of wholesome food, by measuring and weighing the children, and by careful attention to their requirements, general degeneracy can best be prevented and physical efficiency maintained.

Mr. T. J. Macnamara holds strongly the same opinion. "It is a most short-sighted policy to allow our young to grow up ill-nourished, and therefore ill-developed." The happy-go-lucky lack of concern of the community to-day, "is building up for to-morrow a tremendous burden of financial cost and social degradation." This is true, but what is the remedy? The continual spread of sound teaching, and the provision everywhere of depôts for cheap, wholesome fare.

CHAPTER X

Stimulants and Narcotics: Alcohol, Tea, Coffee, Opium

The immense consumption of three drinks which are of the nature of drugs, that is, useful in small quantities in certain states of imperfect health, and harmful, frequently disastrous, in any but very small quantities when taken habitually, makes the effect of this common habit a matter of national importance, not only economically, but physiologically, looking to the future of the race.

It might be tolerable that the people of this island spend every year on unnecessary drinks, mere luxuries, a sum larger than the total spent on the whole of its education, or the whole of its railways, or the whole of its religious and medical organisations combined, but Nature determines that a great nation addicted to gross and habitual excess shall either not continue to be great, or not endure at all. Only so long as a considerable portion of it remains temperate, will it survive and flourish.

Many tribes have been entirely swept away by alcohol, others are decaying or degenerate, and many are deprived of half their efficiency. Alcoholism is an endemic that attacks the healthiest as fatally as the miserable.

Science and a saving common sense have in these times thrown so strong a light on the real facts with regard to alcohol and other stimulant articles of consumption, that, when we gather the testimony, there can be no reason for any sort of doubt as to their influence either upon the man or the nation.

Chemically, they are alcohols or alkaloids with minute but powerful adjuncts; physiologically, they are poisons; economically, they are wasteful; politically, they are corrupting; morally, they are degrading; racially, they are enfeebling when recklessly used.

I find the following views in a recent volume of the *Practitioner*, a medical journal of high repute:[1]—

In 1839 some of the most celebrated physicians and surgeons—Sir Benjamin Brodie, Sir James Clark, Dr. Marshall Hall, Dr. Hope, Drs. Robert Lee, Kay, Mayo, Partridge, Quain, B. Travers, and the Ures, etc.—signed a strong declaration affirming that a healthy man did not need stimulants, and that they tended rather to diminish his capacity for work.

In 1847 another declaration was signed by 2000 medical men, including Drs. Addison, Bright, Copland, Carpenter, Guy, Perreira, Prout, Latham, Sir Henry Holland, and Forbes Winslow, to the effect that alcoholic liquors did much harm, and that total and universal abstinence would greatly contribute to the health, the prosperity, the morality, and the happiness of the human race.

In 1902 Sir Samuel Wilks, M.D., F.R.S., consulting physician to Guy's Hospital, wrote: When the practice of giving alcohol to weak or convalescent patients was stopped, it was recognised that the supposed remedy did great harm. Alcohol used to be given as a regular

thing in fever, but when the fashion was discarded patients would pass through the ailment on a simple diet alone. The present treatment of rheumatism, fever, and pneumonia in the London hospitals is assimilated to that of a temperance hospital. . . . "That a person having a weak pulse requires alcohol I should regard as a vulgar error."

"As a remedy in nervous diseases alcohol is invaluable, but the greatest care must be used in its administration." It can often be used as a sedative.

Sir Henry Thompson completely cured his rheumatism and hemicrania, not by Carlsbad, but by drinking only water instead of alcohol, and by ceasing to eat beasts.

When he was about seventy-five he tried wine again, but with ill effect; it is an "atrocious blunder that as men grow old they need more support" of this kind.

Sir William Broadbent considers alcohol to be useful as a medicine in many kinds of disease.

Dr. Sims Woodhead was early impressed, as a student at Edinburgh, by the fact that "nearly every athlete, who was not already an abstainer, became practically a teetotaller during his period of strict training." It was not the dining, working, or dancing that upset the drinkers, but the difficulty of getting rid of even small quantities of alcohol from their system. The teetotallers, on the other hand, lived without trouble in the ordinary way. "The man who does not add alcohol to his waste products is able not only to offer a greater resistance to the onslaughts of disease, . . . but to do the best work of which he is capable."

Dr. James Edmunds, M.D., M.R.C.P., in an in-

teresting paper, mentioned that he initiated in 1868 the system of treating patients at the British Lying-in Hospital without alcohol. The mortality of the women and infants diminished. The new departure was very unpopular with nurses and patients, and eventually Mr. Edmunds and his friends separated themselves from the hospital and founded the Temperance Hospital in 1873. The hospital has been successful, with good recoveries and a low mortality. Only 3 out of 129 operation patients died, and these were extremely severe cases. Mr. Edmunds estimates the net cost of alcohol to the United Kingdom at £220,000,000 a year. Mr. Whittaker's lower estimate, £189,000,600, considerably exceeds the annual value of all the dwelling-houses in the United Kingdom.

Mr. Pearce Gould, M.S., F.R.C.S., surgeon to the Middlesex Hospital, stated that he has noticed malignant disease to advance very rapidly in persons addicted to drink; often while little alcohol was given in the hospital the disease made only slow progress. Alcohol may in some kinds of disease be usefully employed, but anything like a free use of alcohol is strongly to be deprecated.

Mr. Whittaker was quoted as having come to the conclusion that practically the whole of the alcoholic liquor is consumed by 55 per cent. of the whole population, in which children are included.

Dr. Vacher, M.O.H. for Cheshire, showed that 110,215 persons died of the very specially alcoholic diseases in the twenty years 1881-1900, and that the deaths in the last years of the period were very largely in excess of the first years; as regards chronic alcoholism, 260 per cent. in excess. London and

Lancashire have much the highest rate, Cornwall the lowest.

"Of a large number of deaths actually due to the drinking of alcohol it is not possible to take account."

Dr. Ridge, M.D., B.S., B.Sc., wrote that the life-shortening effect of the continuous action of alcohol is clearly shown in the statistics of life assurance societies. In one very large society the percentage of actual mortality to expected was, in the non-temperance section, 95·8; in the temperance, 71·2 per cent. Other societies have had a similar experience.

In the London Temperance Hospital, of 19,209 patients, only 52 had alcohol given them; of these 33 died. The hospital has been entirely successful.

Not a few doctors, among whom Sir James Paget was eminent, have spoken in praise and thankfulness for the blessing of good food and wine, including port. But these are rather examples of personal temperance than of inductive modern research.

Dr. Pavy has written as follows:—

Strong alcoholic liquids taken repeatedly to a prejudicial extent impairs the appetite and digestive power; . . . the liver, kidneys, and nervous system very strikingly suffer, a diseased state being set up, which forms a distinctly recognisable source of death. Nothing, indeed, leads with greater certainty to premature death than alcoholic intemperance.

. . . Gout appears to be the offspring, not of simple alcoholic liquid, but of alcohol in combination with saccharine and extractive matter.

A light beer well flavoured with hops is one of the most wholesome of alcoholic beverages.

An able writer in the *Daily Chronicle*[2] sums up

the scientific view in these words: "To discover that what is taken 'to keep out the cold' markedly and consistently lowers temperature, and that the indispensable 'stimulant' is often administered as a sedative, would abolish the absurdity to which most people must apparently give credence, that alcohol is invaluable to the doctor and yet fills our hospitals and asylums."

Taken in health, it leads to morbid changes in every cell of the body, especially in the nervous system.

"The two worst stimulants are alcohol and opium." The best are light and pure air.

"The cloven hoof of alcohol may be traced with the naked eye and with the microscope in all the important organs of the body, especially in the digestive, nervous, and circulatory systems."

All stimulants affect the heart, but the subsequent effect of alcohol is invariably depression of the heart's action.

It has been established experimentally that the influence of alcohol, even in small quantities, on the working power and rapidity of action of the brain is pernicious.

According to Sir T. Lauder Brunton,[3] excess is doubly pernicious when the stimulant is taken at meal-times. With excess often repeated, delirium tremens may result, but when the excess is not so great, gradual deterioration of the organisation takes place. The organs chiefly affected are the stomach, liver, kidneys, and nervous system.

A little alcohol, such as brandy, is sometimes useful to some persons, especially if hard-worked.

The Rechabites (abstainers) of the Bradford district

had an average sickness annually for eight years (1870-77) of four days two hours, and a death-rate of 1 in 141; the Oddfellows had thirteen days ten hours' sickness, and a death-rate of 1 in 44. The payments were respectively 5s. 9½d. and 13s. 1d.

The deaths in the United Kingdom Temperance Provident Institution and in the general community were as follows:—

	Abstinence.	*General.*
Expected deaths .	2002	3450
Actual . .	1433	3444
Survivals . .	569	6
Percentage less than expected .	28·42	0·17

These figures are the more remarkable in that the temperance sections are not made up of hereditary and total abstainers from birth.

According to Dr. Mason of the Inebriate Home at Fort Hamilton, New York, the principal predisposing cause which led to excess was the hereditary transmission of the tendency.

According to Lancereau, organic lesions, especially affecting the central nervous system, are derived from drunken parents. And amongst the functional troubles are hysteria, convulsions, and mental deficiency.

Of eighty epileptic youths examined by M. Martin, sixty were children of parents given to drink; in twenty-three, drunkenness was not ascertained.

Dr. Brunton concludes his article by stating (1) that young and healthy people do not require alcohol, and are better without it; (2) that it is useful in

conditions of great weakness, where failure of the circulation is threatened; (3) that no one should take more than 2 oz. of absolute alcohol *per diem*.

Huxley wrote[4] to Mr. E. T. Collings: "I would just as soon take a dose of arsenic as I would of alcohol, under such circumstances [for brain-work]. Indeed, on the whole, I should think the arsenic safer, less likely to lead to moral and physical degradation. If a man cannot do brain-work without alcohol, he had better turn to hand-work." From experience, he says, "my clear conviction is, the less the better, though I by no means feel called upon to forego the cheering effect of a little." "For no conceivable consideration would I use it to whip up a tired or sluggish brain."

"Medicus" wrote last year to the *Daily News*[5] concerning "Athletics and Health": "I am in my eighty-fifth year. I do not remember having ever been confined a single day in the house by illness since I had typhoid fever over sixty-five years ago. I never had a headache, and with the exception of an occasional cold in the head I have had no illnesses of any significance. My opportunities of taking vigorous exercise are few, but when I have a holiday I enjoy fishing, shooting, golfing, bowls, and swimming. . . . Every morning on rising I do about a quarter of an hour of dumb-bell exercise. I then get into a full bath and have a good soaping. . . . I drink no alcohol, and I eat very little butcher's meat, some days none. This mode of life agrees with me perfectly. . . . I could never think of prescribing it for all. As to athletics, they may suit some, but not all, for how many athletes die young, and how often do we find the winners of prizes in athletic sports, mountain-climbers,

and other gymnasts suffering from dilated heart and pulmonary emphysema! The few strong ones escape uninjured, the many weak ones go down."

Sir Benjamin Richardson, M.D., F.R.S., in a remarkable lecture, spoke as follows:[6]—"Foods are substances which either make up the great mass of the body, like water; or which build up the tissues, like albumen, egg, cheese, flesh; or which burn in the body, like fat and oil, starch and sugar, producing animal warmth and keeping up the vital fire; or which go to make up the bony structure. Alcohol does not belong to water food; there is nothing in it which it can represent in regard to fleshy substances, or the structures which make up the skeleton of the body. . . . Its imbibition *reduces* the animal temperature and prevents the formation of those products which come from the burning of food within the body. . . . We can affirm positively that it is no food at all.

". . . There is not a single physician living who is a thoughtful man, not a man of moment in the world of science, thought, or literature bearing on science, who would not tell you candidly and honestly in this day that there must be a very strict border-line drawn to show where the luxury must stop.

". . . All men who are going into training for rowing, racing, long walks, firing, and the like, . . . discover the advantage they get if they altogether abstain from the use of this degrading and debasing physical agent, alcohol.

". . . In regard to mental work, . . . we have been able to show positively that nothing is so injurious to mental work and capacity as for any one to lace himself up with strong drink under the idea that he is

assisting himself. . . . I have seen artists of the highest class, writers of the highest class, and the best members of my own profession, fall in spite of themselves, in spite of all you can say to them, because upon their susceptible, refined, nervous organisation their false friend alcohol is of all others the most deadly, the most mortal, of seductive poisons.

"We now know that those men who have been total abstainers have lived best, worked hardest, suffered least, and come home soundest both in heat and cold. We know that in the tropics those men who have taken least have fought the hardest battles and made the best marches; and those who have taken none have been better off still.

"We have proved that under cold there is nothing so bad as this spirit, and that it is, as it were, death added to sleep."

As regards alcohol in fever, which used to be believed in, Dr. Gairdner, of Glasgow, was one of the first to prove its harmful effect. By reducing and abolishing the use of alcohol in his hospital he reduced the mortality from thirty-six to eight or nine.

The alcoholic form of consumption, liver disease, heart disease, paralysis, apoplexy, dyspepsia, premature old age, "a vast mass of disease," are now recognised as due to alcohol.

As regards insanity, Dr. Edgar Shepherd declared that forty per cent. of the persons who came into the huge asylum under his charge are brought there from the direct or indirect effects of alcohol.

Dr. Mason has stated that the inebriety of parents is a predisposing cause of insanity in the children.

"Ninety-two of 116 cases in our asylum have such a parentage."

As regards crime, which may be partly regarded as mental disorder, the judges of Great Britain have estimated the crime due to alcoholism at fifty to ninety per cent. of the whole.

Sir Andrew Clark, M.D., F.R.S., senior physician to the London Hospital:[7] "I think it is just to say of ourselves that we are a patriotic people, and I, for my part, know of no question which strikes home so forcibly upon the character of the nation as this one question of the most appropriate mode of using alcoholic drink. If we wish to see this nation prosperous, if we wish to see this nation take its right and just place among the other nations of the earth, and if we wish to be sure that the influence which this nation shall exert upon the progress and civilisation, upon the welfare and physical happiness as well of mankind, we should be well assured of the justness of the answer which is to be given to this question. . . . I know something about this question. For twenty-five years at least I have been physician to one of the largest hospitals in the country. It has been a part of the daily business of my life to ascertain the influence which alcoholic drinks exert upon health. . . . I am determined to speak nothing but the truth. . . . Alcohol is a poison. . . . Health is a state which cannot be benefited by alcohol in any degree. Nay, it is a state which, in nine cases out of ten, is injured by alcohol. . . . A certain state of joy of existence . . . is always in some way or other injured by alcohol. . . . Alcohol, even in small doses, will take the bloom off, will injure the perfection of loveliness of health, both mental and

moral. . . . There are some people of very feeble health, particularly nervous people, who do feel a certain comfort from the use of it, . . . and this little help being within the minute quantity of a poison which I think safe to take, I say 'Well, you have got into a habit of it, go on, but take care that you don't get your children into the habit with you.' I have eighteen hours a day at my work, working in a hurry. . . . (Saturday and Sunday as well) . . . ; alcohol *is not a helper of work*. . . . It is a certain hinderer of work." . . .

Sir Andrew Clark then gave an account of Dr. Parkes's crucial experiment at Netley, by which gangs of soldiers abstaining from alcohol were found to do much better work with more energy than those who were supplied with beer.

"Now as to the effect of the use of alcoholic drinks upon disease. . . . I am speaking solemnly and carefully, in the presence of truth, and I tell you I am considerably within the mark when I say to you that, going the round of my hospital wards to-day, *seven* out of every *ten* there *owed their ill-health to alcohol*. . . . They are very good fellows, do their work well, but they are always drinking just a little more than the physiological quantity I mentioned at the beginning. Now, these are the men who . . . looking well, yes, often feeling well, are yet being sapped and undermined by this excess." As to the toper, he is handing down to generations yet unborn "the most terrible evil that man can suffer. . . . Beware of this enemy of the race."

The following testimony comes from various quarters :[8]—

"The craving for drink is a chronic disease of the nervous system."—*Sir Thomas Barlow.*

"Meat is a stimulant, which is the chief cause of the difficulty."—*Dr. Haig.*

"The growth of meat-eating is one cause of the increase of drunkenness."—*Mr. Bramwell Booth.*

"I have observed that a taste for spicy condiments, butcher's meat, and alcoholic liquors is associated."—*C. O. Groom Napier.*

"Meat should be avoided by the man who would utilise his will to conquer his drink crave. I have never had to treat a dipsomaniac who was also a vegetarian, nor indeed have I heard of one."—*Dr. C. E. Macnamara.*

"Such appetite always has its beginning in exciting foods, and narcotic or stimulo-narcotic drinks, and depressant or tonic drugs."—*Dr. Jackson.*

"Mustard, spices, and pepper only stimulate to weaken, and do mischief."—*Joseph Livesey.*

"Our experience has taught us that four meals a day . . . consisting exclusively of fruits, has often been the means of removing the shackles of drink."—*David Paulson, M.D.*

"During an experience of more than twenty years, I have never known a vegetarian who was not also a total abstainer."—*T. H. Evans.*

"Flesh-meat certainly does promote the desire and apparent need for drinking."—*Scottish Temperance League Journal.*

"The modern [vegetarian] diet will destroy the love for drink. The Church can do no wiser thing than help forward dietetic reform."—*Methodist Weekly,* 1903.

"The more flesh food is used, the more serious is the

danger of confirmed alcoholism."—*Dr. H. B. Fowler, forty years Lecturer on Dipsomania.*

"The craving for drink seemed to have left him altogether, a not uncommon effect of this particular change of diet."—*Mrs. Humphrey Ward.*

"The foundation of the drink evil is deeply laid in the nurseries and the dining-rooms of the land, and the habitual, the universal gluttony permitted."—*Dr. E. H. Dewey.*

"The eating and drinking reformation is at the foundation of all the good that would be produced in society."—*Joseph Brotherton, M.P.*

"Most people could drink wine with animal food, but not with farinaceous or amylaceous food."—*Liebig.*

"With the reformed diet the liking for alcohol was departing, 'a thing I had never imagined to be possible.'"—*Eustace Miles.*

"Alcohol, even in a dilute form, interferes with digestion."—*Dr. Henry Munroe, Hull.*

"In alcoholics the risk of surgical operations is very much greater than in others."—*Dr. Brunton, F.R.S.*

"I hardly know any more potent cause of disease than alcohol."—*Sir William Gull, F.R.S.*

"In 1000 grains of wine there are only $1\frac{1}{2}$ grains of nourishment."—*The Lancet.*

"When I think of the terrible effects of the abuse of alcohol, I am disposed to give up my profession, to give up everything, and go forth upon a holy crusade, preaching to all men, 'Beware of this enemy of the race!'"—*Sir Andrew Clark, M.D., F.R.S.*

Dr. Arthur Newsholme, M.D. Lond., D.P.H., states that the rate of mortality of publicans, wine and spirit merchants, etc., between the ages of twenty-five and

forty-five is very little less than *four* times the rate of clergymen and ministers.

From twenty-five to sixty-five, more than *five times* as many innkeepers (publicans) fall victims to alcoholism than other men, and nearly twice as many kill themselves by "suicide." More than four times as many publicans die of gout.

Publicans head the list under alcoholism,—liver diseases, and gout, and in kidney disease they are ahead of all but specially dangerous trades.[9]

Lord Kitchener, referring to Egypt: "The secret of maintaining good health in this country [the Soudan] is to be temperate. Every traveller of note, Sir Samuel Baker, and a host of others, have had this same experience, and I attribute the exceptionally good state of this battalion in a large measure to the high percentage of temperance men in it." We ought to get rid, he said, of "the nonsensical and cowardly ideas that we can't keep well or can't be good pals without having to buck ourselves up with the drink. It is all rubbish. . . . I can unhesitatingly say that the majority of cases of sunstroke I have known in this country, in Aden and India, have been due to alcoholic excess. . . . I was horrified by the number of cases of cholera amongst men who were given to alcoholic excess. . . . The Egyptian soldiers who, as you know, seldom, if ever, touch stimulants revived under their action in the most marvellous way." [10]

Admiral Cotton, of the United States Navy, in a letter to a correspondent: "It is now forty years since the spirits ration was abolished in the United States Navy, and during that time nothing in the way of spirituous or malt liquor has replaced it." "The

standard of excellence has been raised to a degree that could scarcely have been expected even by the most sanguine possible." "I can conceive of no conditions under which the re-establishment of the spirits ration could be advocated; and I speak from personal experience, as my period of service covers both the use and non-use." [11]

Miss Balgarnie states in regard to India, that Mr. Lloyd, a magistrate at Bangalore, admitted at a public meeting that in most of the villages liquor-shops were first opened by the Government. The retiring Surveyor-General of Ceylon testified that, after thirty-four years' experience, he had found crime increased amazingly in the country districts, and the general tone of the people lowered, and attributed that to the liquor-shops opened by the Government, which is distiller, brewer, and seller. Twenty-six lacs of rupees were gathered in 1875 from this source, sixty-three and a half in the most recent year for which reports are out.

Mr. Sven Hedin writes: [12] "Spirits are an intolerable nuisance in a caravan; they slacken discipline and undermine the men's strength." "Except for this alcohol [for natural history specimens], I carried no spirits with me." The men, says the author, did not seem to miss them.

Dr. J. J. Ridge, M.D., has pointed out that Dr. W. B. Carpenter, F.R.S., some years ago adduced the Government returns of the sickness of the European troops of the Madras army for the year 1849; the men were classed as total abstainers, temperate, and intemperate; the hospital cases were 130, 141, and 214 respectively, the deaths, 11, 23, and 44. Later statistics corroborate these results.[13]

Dr. Norman Kerr, M.D., in a paper on the "Mortality from Alcohol," has, after a careful computation, arrived at the conclusion that 134,499 persons die annually from alcohol in the United Kingdom, of which persons 45,562 die by personal intemperance, and 89,437 *by the consequences of intemperance in others.* Children are great sufferers through the self-indulgence of parents.

The annual rate of mortality per 1000 between twenty-five and sixty-five among clergymen is 11·7, among publicans, beer and spirit sellers, 26·64.

Of course, from well-known reasons, the registration returns are no criterion whatever of the effects of excessive drink in directly or indirectly causing death.

The organs chiefly damaged by tippling are the respiratory, the circulatory, the digestive, the brain, the nervous system, the liver, and the kidneys.[13]

Mr. Arthur Sherwell writes:[14] The *Report of the Judicial Statistics of Scotland* shows a "rapid increase in crime and disorder, which began in 1897, and has as yet received no check." "Small crimes have increased enormously since 1881."

The average number of commitments to prison per 10,000 has increased from 120 in 1897 to 149 in 1904, by far the highest on record. The Commissioners attribute the rise to the plenitude of employment and high wages, "more money to spend on drink." Out of a total of 179,821 persons charged with criminal offences in 1900, 114,207 were for offences connected with drinking.

In Aberdeen, the persons charged for breach of the peace and drunkenness were 2033 in 1897, 3579 in 1901. 4509 of the persons dealt with during the

year were under the influence of intoxicating liquor. Assaults by husbands on wives rose from 48 to 122. Drunkenness rose 72 per cent.; petty assaults, etc., 78·4 per cent.

An examination of persons convicted of serious crimes convinced the Commissioners that the majority (probably 66 per cent. at least) of such cases are closely connected with, and have their real explanation in, alcoholism.

Only 6 per cent. of the prisoners were abstainers.

The number of crimes committed with the object of getting more drink is very great.

The number of prisoners examined who had begun to drink alcohol from boyhood was very notable—48 per cent.

Dr. Clouston, who speaks on the subject of intemperance and insanity "with unrivalled knowledge and unquestioned authority," has affirmed that a larger consumption of alcohol has led to a larger proportion of cases of insanity and of deaths from nervous diseases.

Brisk trade and high wages have to a large extent been the cause of the excessive number of mental cases in 1900. And "for every man in whom excessive drinking causes absolute insanity, there are twenty in whom it injures the brain, blunts the moral sense, and lessens the capacity for work."

Since 1858 the number of lunatics under the Scotch Board, while the population has grown by 49 per cent., has increased 180 per cent. The increase of the deaths of women from alcohol from 1855 to 1900 is no less than 100 per cent.

The prospect is alarming for Scotland. Dr.

Clouston does not think that a drink-sodden race can be cured [assuming probably the greatest moderation] in a hundred years.

Dr. Havelock, physician-superintendent of Montrose Asylum, reports for the year 1903 : Careful investigation shows that not more than ten per cent. were mentally disordered through alcohol. Yet Dr. Havelock strongly recommends great moderation in the use of alcohol, and that the majority of those in whom there is any family record of insanity should abstain entirely. This warning, he points out, includes a very large number of persons.[15]

Mr. T. P. Whittaker, M.P., writes :[16]—" In 1839 and 1847 two declarations were signed by the leading physicians of the time. 1. " The most perfect health is compatible with total abstinence from all intoxicating beverages." 2. " Total and universal abstinence from alcoholic liquors and beverages of all sorts would greatly contribute to the health of the human race." Gradually in the course of fifty years these opinions have received the mass of corroborative evidence which is required to satisfy the mass of prejudice which always occupies the position of advantage. Mr. Whittaker's case forms a tremendous indictment of human weakness.

From the ages of twenty to seventy-four the mortality of abstainers is very considerably lower than that of the non-abstainers.

For the whole period of life between ten and ninety-five, the number of deaths in the temperance section was 5124 ; at the rate of the general section it would have been 6959. The mortality of the general section is higher by thirty-six per cent.

From twenty-five to sixty years, the great working period, the difference is forty per cent.

Out of 100,000 persons alive at thirty, in the two sections, 11,207 more abstainers than non-abstainers would be alive at seventy.

Dr. Tatham's report of results of investigations [17] on the deaths from alcohol and diseases of the liver (the organ chiefly affected by liquor), in different occupations, gives the following number of deaths, taking those of occupied males at 100 :—

Coachmen, cabmen	153	Musicians .	168	Butchers .	228
Costermongers	163	Hairdressers	175	Brewers .	250
Coalheavers .	165	Dock labourers	195	Inn servants	420
Fishmongers	168	Chimney sweepers	200	Innkeepers .	733

"All evidence points to the fact that alcohol, except in strict moderation, is injurious to men who are exposed to extremes of climate (great heat and great cold), or who have to undergo great bodily or mental labour. Its effect on the circulation is distinctly injurious to those engaged in hard bodily work." . . .

"For thoroughly healthy people, alcohol in any form presents no advantages, and for children and young people it is decidedly injurious."

From an address by M. Georges Berbey on "Alcohol, the Purveyor of Misery and Crime," I take these extracts :—"The ravages of alcohol are frightful. It devastates many of our finest provinces—Normandy, Brittany, the Vosges, Picardy, Maine. The population of the Orne has diminished by 80,000 in the course of the last twenty-five years. Infant mortality increases. Alcohol costs the loss of an army corps every year. It is a cause of tuberculosis; 150,000 young men die of

phthisis every year. Crime, epilepsy, madness, misery are abundantly produced by it. The miners could in ten years buy up all the mines in France with the money they spend on alcoholic drinks."

Seventeen pages are occupied with the crimes committed in England during the Christmas and New Year week of 1903. "One would think," said a magistrate, "you were celebrating the birth of the devil rather than the birth of Christ."[18]

In figures the actual reported offences give a slight idea of the prevalence of intemperance at that season.

Murders	6	Damage to property	27
Manslaughters	3	Robberies through drink	12
Suicides, or attempted	16	Cruelty to children	10
Stabbing and wounding	17	Drunk in charge of children	8
Sudden or violent deaths	53	Drunk in charge of vehicles	3
Outrageous and violent assaults	51	Perilous accidents	3
Assaults upon wives	26	Old offenders	24
Assaults upon constables	44	Miscellaneous	59
Drunken, obscene language	12		

The great rise in the death-rate for the week or two after Christmas is probably as much the result of excessive eating as of intoxication.

Professor Peellmann has found, as a result of inquiry into the posterity of an alcoholic ancestress, that during seventy-five years, out of the 709 descendants which he had been able to trace, 596 had come within the arms of the law.

The French Minister of Justice has just published statistics showing that 53 per cent. of the persons convicted of murder, 57 of those convicted of arson, and 90 per cent. of those convicted of causing bodily harm, were drunkards; out of those convicted for offences against morals, 53 per cent. were habitually

heavy drinkers, and of vagabonds and beggars, 70 per cent. were heavy drinkers.[19]

It is stated in the report of the inspectors of lunatics for Ireland for 1901–1902, that "the total number of lunatics under care increases in Ireland at a rapid rate in proportion to the population." . . . There is a "rapid increase of general paralysis amongst the urban population of Ireland, where it was comparatively unknown not many years ago." At the same time the amount of alcohol consumed per head has increased, and both beer and whisky are commonly drunk to excess.

It is reported concerning the Floodgate Street area in Birmingham, that one-third of the deaths were in public institutions. More than one-third of the children attending the Board schools were half-starved and wholly untended. There was one public-house to every 89 of the men and women over eighteen; £300 a week was spent in drink by the 1500 families living in that area, whose total earnings only reached £1050. All these things and worse were described by witnesses who had a right to speak, by the teachers, missionaries, and manufacturers living in that area, and yet their evidence and appeal were disregarded, and all the licences objected to were renewed.[20]

In the same month the opinion of "several distinguished physicians" who had been interviewed, was given in the Press: "Were humanity as considerate for posterity as it is for the sick, many scourges that are now rampant might before many years be utterly stamped out."

Windfall money spent in drink and crime.—It is a common thing, when any large or unexpected sum

of money comes to persons of the labouring class, for the whole to be spent on intoxicating liquor. On almost any part of the coast the wreck of a vessel containing barrels of alcoholic liquor is followed by an orgie of drink and death. High wages are often similarly spent. Men recently employed in making a railroad in Perthshire drank themselves desperately drunk every Saturday; some of them had to be picked off the roads where they lay, and nursed back to consciousness. A recent example of a mode of enjoyment on festive occasions will suffice.

On 26th February 1904, at Wolverhampton, a master plasterer gave his workmen a treat, consisting of a barrel of beer and drinks of brandy and ginger-beer. At this man's request, his guests were cleared out by the police five times, until they were nearly all helplessly drunk. Late in the evening one of the men was killed in the house.[21]

Under "free trade in beer," in a few years following 1824, alehouse licences rose from 47,933 to 51,482, and spirit licences from 37,196 to 45,675. In October 1830, every ratepayer gained the right to open a beer-shop on paying £2, 2s. to the Excise Office. The effect was immediate and disastrous. Sydney Smith, who had advocated "free trade," wrote, "Everybody is drunk. The sovereign people are in a beastly state."[22]

Mr. John Burns, in his recent very able address for the Lees and Raper Trust, spoke of his observation of the ravages of alcohol in the workshop, the street, the asylum, and the jail. "Drinking dissipates the social force, industrial energy, and political strength of the people. The general summary of my life's

experience amongst the working classes of this and other countries . . . is that Drink, with too many of them, is their bane, drunkenness their curse, excessive drinking their greatest defect. . . . It is the chief cause of many of the difficulties that beset and burden them as workmen, husband, father, bread-winner, and citizen." It is "an ancient folly that blights modern mankind." It "undermines manhood, enervates maternity," and, as Lord Brougham said, "is the mother of want and the nurse of crime." "It is the greatest item of our Imperial spending." The estimated expenditure of the nation on intoxicants during the last twenty-five years is four thousand millions (£4,000,000,000); in 1903 the expenditure was over £174,000,000, at the rate of £4, 2s. 4d. per head, or about £18, 15s. 4d. per working-class family, and £46, 18s. 2d. per family of other classes. It is stated by investigators that about 50 to 55 per cent. of the whole people are abstainers. Therefore the drinkers really spend more than £25 per family per annum on alcohol.

In Dr. Tatham's supplement to the Registrar-General's fifty-fifth report, it is computed that the mortality figure of the publicans in industrial districts is 2030 compared with 1000 for all males, with 664 for grocers, 632 for labourers, and 533 for clergymen.

Dr. Eccles, Sir Victor Horsley, Dr. Mott, and others are stated to have said that alcohol predisposes to or accentuates all forms of illness.

Dr. C. K. Millar, medical officer for Leicester, considers intoxicating drink as a greater preventable evil by far than all others combined affecting public health.

Mr. Charles Booth finds it to be the most prolific of all causes of trouble among the working classes.

Mr. Booth, Mr. Rowntree, Mr. Whittaker, and Mr. M'Dougall estimate that 25 to 51 per cent. of cases of poverty are due to intemperance.

In Belgium, 43 per cent. of the accidents in mines and factories appear to be caused by it.

In the London General Hospital, on Saturday nights, according to Sir Victor Horsley, 90 per cent. of the injuries are directly due to drink.

Mr. Burns quotes Dr. Oliver as a great authority on the physiological effect of alcohol. "Alcohol first stimulates and then depresses the neuro-muscular system. . . . Alcohol benumbs the sense of fatigue and leads to an extravagant expenditure of energy." Typewriters, etc., make fewer errors when they abstain. Taken for long, and in excess, alcohol leads to an untimely death. Diseases of digestion, liver, heart, and nerves, idleness, unfitness for work, attend upon the misuse of stimulants.

Dr. Griltmett found in his experiments upon work and alcohol that more work was done without than with the drink. The experience of an American employer of labour, who divided his men into two sets, was that, after five days, the abstainers did the most work. All modern experience shows that in arduous undertakings total abstinence is rewarded.

Dr. Lonnet gives this very valuable testimony on the influence of alcoholism in parents on their children. He found that ninety-nine women who died before age twenty-nine from alcoholism had, before becoming addicted to alcohol, twenty-eight children, all of whom were healthy and vigorous; after becoming addicted

to alcohol they had six children, and these were delicate or deformed.

Mr. Burns was informed by a London sanitary inspector that he had never yet served an overcrowding notice except on tippling tenants, and had never issued a notice to abate a nuisance on a teetotaller.

It is established in this paper beyond dispute that a rising wage rate and increased leisure are associated with increase of drunkenness, crime, and lunacy. In this connection it is curious to notice that in a Lancashire town the arrests for drunkenness on Saturday are 2317, on Thursday and Friday, 738 and 766.

The following views come from American labour leaders :—"If I could inaugurate a strike, I would drive the liquor traffic from the face of the earth."—*P. M. Arthur.*

"The liquor traffic is responsible for nine-tenths of the misery among the working-classes."—*T. V. Powderley.*

"In every case, so far as my observation goes, drunkenness was at the bottom of the misery, and not the industrial system or the industrial conditions surrounding the men and their families."—*U.S. Commissioner Carrol D. Wright.*

Cardinal Vaughan said of the drink traffic in 1899 : "The houses of the trade are studded over the most squalid and poorest districts, and are so many vampires sucking the life-blood out of the bodies of the poor. Disease, crime, and pauperism are perpetuated. . . . Vain is the appeal to the Legislature ; both Houses are too deeply interested in the trade as it stands."

Belgium, according to the Governor of Hainault, has 190,000 public-houses ; the people drink 2·42

gallons of 40-degree alcohol, or 55 gallons of beer a head, and the cost per family is £14, 4s., per head £3, 4s. "Alcoholism gives 80 per cent. of the suicides, 74 per cent. of the condemnations to imprisonment, 79 per cent. of the poorhouse boarders, 45 per cent. of the cases of insanity, 43 per cent. of the accidents in mines and factories.

In some towns, every third house is a bar. As in France, the multiplication of these drinking-shops has enormously increased the tippling, the disease, demoralisation, degradation, crime, and decrepitude of the people.

As to the remedy for the immense evils and the national peril of alcoholism, Mr. Burns says: "The chief stepping-stone is personal abstinence,—the best, as it is the first and most enduring of all remedies."

The report of the Royal Commission on Intemperance, and the reports of judicial statistics show that there has been a rapid increase of drinking and of crime and disorder in Scotland since 1897. The numbers of offences are now at an unexampled figure. The increase is attributed to the increased number of irregular workers, and the higher wages with increased employment. Insanity and nervous disorders are much more common; the insane were, in 1861-65, 205 per 100,000, in 1896-1900 they were 337.[23]

The Departmental Committee on Physical Deterioration had evidence that in the alcoholic family there is a decrease of vitality in successive children, the earlier-born children being healthy, the later deficient, epileptic, or otherwise diseased. Many of the children of drunkards, however, are not permitted by natural law to survive.

"As the result of the evidence laid before them, the Committee are convinced that the abuse of alcoholic stimulants is *a most potent and deadly agent of physical deterioration.*"

Tea and Coffee.

The excellent refreshing qualities of tea and coffee have made their infusions the commonest drinks in many countries during the last thirty years. They were first imported in small consignments from China and Persia two or three centuries ago. Their powerful and even fatal influence when used in excess was early recognised.

In Graham's *Social Life in Scotland in the Eighteenth Century*, tea-drinking is related to have been thought "not less mischievous than dram-drinking." Tea was much condemned by old-fashioned people, and sparingly used. Tea- and whisky-drinking were "exceedingly hurtful to health and morals."[24] Tea was first used in Scotland at the end of the seventeenth century. Towards the end of the eighteenth century "there was scarcely a house in the parish, except those in indigent circumstances, in which tea was not used at least once a week, and by many of the farmers twice a day." Coldingham speaks of tea and whisky as superfluous and pernicious articles.[25] And Pencaitland says: "The rage for finery is much more harmless than the tea- and dram-drinking which pervaded almost every town and great village."[26]

Since those days the increase of the amount of tea drunk in the United Kingdom has been nearly continuous.

The consumption of tea in the United Kingdom per head was in 1852 2 lb., in 1859 2·67 lb., in 1878 4·5 lb., in 1885 5 lb., in 1900-3 6·5 lb.

China supplied 98 per cent. in 1857-9, only about 2 per cent. in 1903,[27] when the stronger Indian tea had taken its place.

Meat (flesh) imports in 1857-59 were 1·24 million cwt.; in 1874-76, 5·7; in 1889-91, 13·16; in 1899-1901, 20·23.

The flesh imports per head were in 1857 5·95 lb., in 1903 50 lb.

The Statistical Society's report on flesh-meat consumption[28] showed that the mechanics and labourers consume per annum 107 lb., the lower middle classes 122 lb., the middle classes 182 lb., the upper classes 300 lb.

This computation counts the bone, etc. into the weight, but omits poultry and game, potted meats, heads, hearts, tongues, livers, etc.

It is obvious that the consumption both of tea and of flesh has very largely increased during the last fifty years.

The *Daily Mail Year-Book* for 1903 gives the following account of the reported consumption of tea and coffee in several countries :—

Tea—

	United Kingdom.	Russia.	Germany.	Holland.	France.	United States.	Australia.	New Zealand.	Canada.
1898	5·86	0·82	0·11	1·39	0·05	0·93	7·21	6·41	3·89
1899	5·98	0·79	0·11	1·39	0·05	0·98	7·63	6·40	4·72
1900	6·10	0·93	0·12	1·48	0·06	1·09	7·81	6·78	4·64

Coffee—

	United Kingdom.	Germany.	Holland.	Belgium.	France.	Austro-Hungary.	United States.	Australia.	New Zealand.	Canada.
1894-96	0·69	5·27	15·13	8·23	4·14	1·96	8·58	...	...	...
1897-99	0·70	6·00	21·37	10·19	4·51	2·09	10·86	0·58	0·34	1·06
1900	0·71	6·29	16·57	8·5	4·66	2·06	9·81	0·58	0·27	1·00

Tea and Coffee together—

	United Kingdom.	Germany.	Holland.	France.	United States.	Australia.	New Zealand.	Canada.
1900	6·81	6·41	18·05	4·72	10·90	8·39	7·05	5·70

John Wesley wrote in 1748 :[29] "I could not imagine what should occasion the shaking of my hand, till I observed it was always worst after breakfast, and that if I intermitted tea-drinking for two or three days it did not shake at all. Upon inquiry, I found tea had the same effect on other persons of my acquaintance, and therefore saw that this was one of its natural effects, as several physicians have often remarked, especially when it is largely and frequently drank, and most of all on persons of weak nerves. . . . July was two years I began to observe that abundance of the people of London with whom I conversed laboured under the same and many other paralytic disorders, and that in a much higher degree; inasmuch that some of their nerves were quite unstrung, their bodily strength quite decayed, and they could not go through their daily labour." After a daily practice of tea-drinking for twenty-seven years, Wesley left it off. The effects of relinquishing it fully answered his expectations. "My paralytic complaints are all gone, my hand is steady as it was at fifteen. . . . I save upwards of fifty pounds [!] a year. Many eminent physicians have declared . . . that if frequently used by those of weak nerves it is no other than a slow poison. When I first left off tea, I was half asleep all day long; my head ached from morning till night. . . . In a week's time all these inconveniences were gone."

Dr. R. J. Mann, F.R.C.S., describes the action of

theine as follows: Theine exerts a very powerful influence upon the nerve structure of human beings, when administered in a concentrated state. It first lessens the heart's stroke, then produces a feeling of pleasant excitement. In large doses it causes wakefulness. In very large doses it may be followed by convulsions and death. It is a compound similar to morphia and nicotine. Two teaspoonfuls of tea furnish 4 to 6 grs., which is the full stimulant dose. There are about 175 grs. of theine to 1 lb. of the leaves.[30]

According to Dr. Pavy, tea is a light beverage, and, taken in moderate quantity, exhilarating and restorative. But when tea is consumed in a strong state and to a hurtful extent, it is capable of acting in a powerful manner on the nervous system. Nervous agitation, muscular tremors, a sense of prostration and palpitation, constitute effects that have been witnessed. . . . It diminishes the action of the bowels. Coffee is invigorating and restorative, but more heating and stimulating than tea, heavier and more oppressive to the stomach. It is not so powerful in disposing to wakefulness as [strong] tea. In immoderate quantity it produces feverishness, disordered nervous action, tremor, palpitation, anxiety, and deranged vision.[31]

Sir T. Lauder Brunton, M.D., F.R.S., says that amongst the Chinese tea is only infused for a very short time; after a few *seconds* the water is poured off. The combined effect of very hot tea and of the tannin in a strong infusion produces dyspepsia. Other constituents than tannin contribute to this effect. A single cup will sometimes bring on great acidity and

heartburn. When long infused, its harmful action is much greater. Tea with animal flesh should be altogether avoided.

Coffee is more apt than tea to disorder the digestion in many people, and in some causes biliousness. When taken in excess it not only produces digestive disturbance, but nervous symptoms, palpitation, restlessness, irritability, and general nervous depression. In most cases of dyspepsia coffee does not agree.[32]

Sir Risdon Bennett, M.D., F.R.S., states that the proper way of making tea, in the Chinese fashion, is to put the tea into a cup, and having poured hot water on it, to drink the infusion off the leaves without any addition. The Russians drink tea with a squeeze of lemon but no milk. Tea contains volatile oil, gluten, tannin, and theine. The volatile oil is apparently the cause of giddiness, headache, tremors, etc., and wakefulness. These effects are greatest in green and in new tea. The tannin causes indigestion. The nerves of some people are very much affected by a small cup of coffee, and it produces wakefulness.[33]

Dr. Eugene Talbot, M.D., D.D.S., of Chicago, writes that professional tea-tasters have long been known to suffer from nervous symptoms; very early in the practice of their occupation the head-pressure symptoms of neurasthenia occur. Tremor also occurs early, and eye disorders. Symptoms of excessive tea-drinking are—nervous excitement, nervous dyspepsia, rapid and irregular heart action, neuralgia of the heart, etc.[34]

In the *Lancet* for 1891 (November) an account is given of the origin of the nervous symptoms in infants whose mothers were excessive tea-drinkers. "It is

evident that tea produces a grave form of neurasthenia readily transmissible to descendants." Tea tends to check both stomach and bowel digestion, and thus increases self-poisoning.

Excessive coffee-drinking produces similar effects. Mendel finds that in Germany coffee inebriety is increasing and supplanting alcohol. Profound depression, with sleeplessness and headache, are early symptoms. There is much tremor and rapid heart action.[34]

The *British Medical Journal* says: "It is well known—and English physicians have laid great stress on this point—that the abuse of coffee and tea often brings on gastralgia, dyspepsia, and, at the same time, more or less disturbance of the apparatus of innervation."

Sir William Roberts showed that tea and coffee interfered with the digestion of proteid, and that their total effect is to delay or prevent digestion.

Dr. Kellogg discards tea and coffee from the bill of fare of his sanatorium, "because they are poisons, mild intoxicants," injurious to the nervous system and to digestion. "The digestion of starch ceases entirely in the presence of tea or coffee." They also dilute the gastric juice.[35]

I find the following reports in Dr. Alcott's book *On Tea and Coffee*:—

Mr. Burdell, a dentist of New York, often noticed the great nervousness of tea-drinkers.

Dr. John Cole, M.R.C.P., London, noticed, in a series of careful observations, the following effects of tea:—Discomfort, sinking, feeling of emptiness and craving, fulness, frequent sighing, excitement, quick

pulse, etc. The last symptoms also follow the use of strong coffee.

Aggravated symptoms with susceptible subjects or excessive tea- and coffee-drinkers are these: vertigo, unsteady gait, formication of the scalp, violent pain in the head, fluttering and feeble pulse, fulness of the chest, palpitation of the heart, irritability of mind, syncope.

Dr. Cole was able to cure many cases of this kind by enjoining abstinence.

Dr. Cullen, the eminent Scotch physician, found that "scientific experiments prove that an infusion of green tea has the effect to destroy the sensibility of the nerves and the irritability of the muscles."

Further, without excluding black tea: "From the experiments above mentioned, and from the observations which I have made in the course of fifty years, upon all sorts of persons, I am convinced that the properties of tea are both narcotic and sedative."

As by an increased dose they "extinguish the vital principle altogether, they . . . properly and strictly may be called poisonous."

Dr. Combe writes[36] that "when made very strong, or taken in large quantity, . . . they not only ruin the stomach, but very seriously derange the health of the brain and nervous system."

Dr. Bell of Philadelphia, Professor Sweetser and Dr. Burdell of New York, and Dr. Hooper[37] give similar opinions. The latter says that the Chinese keep tea for at least twelve months before using it, in order that its narcotic properties may evaporate.

Dr. Beaumont, the well-known surgeon of the United States early in last century, states that "even

tea and coffee, the common beverage of all classes of people, have a tendency to debilitate the digestive organs." The effects are often not perceived, but the constant habit of using even a weak decoction of the narcotic has an injurious influence. Much damage is done to the teeth by the frequent drinking of hot tea and coffee, and consequently in many cases the digestion becomes affected by this in addition to the direct effect. In Dr. Arbuthnot's words: "Mastication is a very necessary preparation of solid aliment, without which there can be no good digestion."

Experiments on cows showed that a herd fed upon slops, hot from a distillery, very soon got their teeth and jaws badly diseased.

Prof. Albert Prescott wrote in the *Popular Science Monthly* for 1882, that caffeine and theine are built on the chemical type of the alkaloids, bodies which include narcotics, stimulants, hypnotics, deliriants, poisons, tonics, some of them affecting the whole nervous system, one to excite, another to depress, and others influencing only parts of the body. But Dr. Sharper, in the *British Medical Journal*, showed that theine, with the infusion from tea leaves, containing the essential oil, is a very different thing from theine alone. Theine may quiet the nerves, but the essential oil may excite them, and is the substance to which must be ascribed the disorders of the nervous system which affect tea-drinkers and coffee-drinkers.

Dr. Page concludes that all stimulants and poisons, as tobacco, coffee, distilled liquors, etc., *tend* to local and general paralysis. Irritability, nervousness, etc., are the result of impoverished blood and poisoned circulation.

Large quantities of drink, swallowed with a meal, have a bad effect, and are quite unnecessary, "hence many unpleasant sensations, such as fulness, wind, distention, heat, acidity, and even pain; hence, too, chronic inflammation . . . and many more diseases."

Mr. Graham, in his lectures,[38] states that "tea and coffee are among the most powerful poisons of the vegetable kingdom." Professor Hitchcock says "their bewitching influence lies in their narcotic properties." Dr. Trotter, alluding to nervous maladies, says that "the only means of cure lies in a total abstinence from every species of fermented liquor . . . and tea, coffee, opium, and all other narcotics." Of coffee Dr. Combe says that it increases our comfort for the time, but, like all other stimulants, exhausts the sensibility of the part on which it acts. The Italian medical writer Sinibaldi says, "The new drink," coffee, produces debility, disorder of digestion, palsy of the limbs, and vertigo, and contributes most shockingly to the destruction of our constitution."

Mr. Burdell, in his experiments on small animals, found that coffee produced more excitement of the nervous system than tea, but did not produce death so quickly.

Dr. Hahnemann has described in an interesting way the pleasant first effects and the unpleasant later effects of coffee on the sensations and constitution.

The effect of coffee and strong tea on children is worse than on grown persons. Feeble appetite, timidity, gloom, discontent, bad sleep, difficult dentition, sore eyes, a hectic condition, and unsteady gait, are among the symptoms.

Dr. Combe's observation deserves more general

appreciation than it receives: "Health is more frequently undermined by the gradual operation of constant though unperceived causes than by any great and marked exposures of an accidental kind."

Finally, Dr. Alcott, from forty years' observation, finds "heart trouble" often fatal, the greatest evil resulting from coffee, tobacco, etc. They "disturb the nerves that operate the heart," and all persons who are not strong in circulatory power are likely to break down under the effect of these substances.

Dr. Bock writes: "The nervousness and peevishness of our times are chiefly attributable to tea and coffee." "The digestive organs of confirmed coffee-drinkers are in a state of chronic derangement, which reacts on the brain."

Sir Benjamin Richardson asserts that the misery of the women of the poorer classes is more than doubled by the use of tea.

Messrs. Parkes and Kenwood, in their *Hygiene*, observe that "the action of tea on the system is similar to that of coffee. It is valuable as a nervous stimulant, and restorative in fatigued conditions. Its abuse leads to constipation, weakened digestion, . . . nervous depression, sleeplessness, and trembling."

In the report of the Committee on Physical Deterioration, I find that Dr. Purdon of Belfast is quoted by Dr. Young with entire approval in saying that living so much on white bread, tea, and jam, instead of oatmeal and milk, is doing a great deal of harm. Formerly the children lived on oatmeal, buttermilk, and potatoes —excellent food. Dr. Robert Hutchison stated that the chief fault of the diet of the working classes is the

excessive use of tea and bread. Much anæmia and neurosis results from this habit. At Manchester the custom of drinking a stew of tea at breakfast and in the factories leads to much illness, including varicocele, excessive constipation, etc. A very large number of young men are rejected for the army on account of ailments brought on by tea-drinking.

Dr. Hawkes' experience in Finsbury showed that many women and girls took three or four pints of "tea-poison" in the course of the day. Pickles and vinegar were often the staple of the meal which ought to have been a solid one, and this wretched stuff was washed down with tea. "An enormous amount of dyspepsia" was thus set up, and to allay pain the women resort to alcohol, with the worst consequences.

The Commissioners note that "a striking consensus of opinion was elicited as to the effects of improper or insufficient food in determining physique," and recommend the instruction of mothers and of children in matters of diet and hygiene.

Nansen, a very competent observer, has written in his *Eskimo Life*: "It was, of course, a clear necessity to forbid the sale of brandy in Greenland on pain of greatly accelerating the extermination of the race. . . . I hold that not only should the sale of brandy be prohibited, but also the sale of coffee, tobacco, and the other indubitably noxious, or, at anyrate, valueless products which we have introduced among the natives. It took me a long time to make them acquire the taste for them. . . . On the west coast we have unhappily been successful in begetting the taste for coffee, and this has not a little contributed to the decline of the race."

Excessive tea-drinking is named by the Irish Com-

missioners for Lunacy as a cause of the increasing insanity among the people of Ireland.

In a very large number of cases tea and coffee, like opium, cocaine, and other drugs recklessly imbibed, weaken the organism to such a degree, and so shatter the nerves, that worries which could in a healthy state be well borne become capable of most seriously incapacitating body and mind. Even when far short of producing immediately serious effects, they exert an enfeebling influence on the coming generations.

Opium, though of little general importance in Europe, has immense influence for evil in the Far East. Great numbers of the people of China are being degraded or destroyed by this drug, which has been introduced in a most pernicious form at the point of the sword by Great Britain. In England it has only destroyed a few fine intellects, like De Quincey and Coleridge. In China it destroys the intelligence of multitudes, and brings many of the best people to a miserable death.

The cultivation of opium in India for export to China has been defended on the ground of revenue necessities, but the same kind of argument could be used for every selfish crime and for any massacre profitable to the State. An ex-President of the Wesleyan Conference has said that, if realised, the calamity we are daily inflicting on China would overwhelm us with remorse. It has been called "England's greatest contribution to the wretchedness of the world." Many distinguished administrators, medical men, and missionaries have testified to the immensity of the evil.

Some, like Surgeon-General Moore, have testified

that opium-smoking is harmless. But Archdeacon Moule, on the contrary, declares that no Chinese in his senses, no missionary, no medical man, no civilian at all acquainted with Chinese life, would indorse for a moment this opinion.

Sir Thomas Wade, our Ambassador or Minister in China, says: "It is vain to think otherwise than that the habit is many times more pernicious, nationally speaking, than the gin- and whisky-drinking which we deplore at home. . . . I know no case of radical cure. It has ensured, in every case within my knowledge, the steady descent, moral and physical, of the smoker."

Sir Rutherford Alcock, our Minister to Japan, and then to China, said before the Royal Commission that "the abhorrence expressed by the Government and the people of China for opium as destructive to the Chinese nation was genuine and deep-seated. . . . If Great Britain would give up the opium revenue, and suppress the cultivation in India, the Chinese Government would have no difficulty in suppressing it in China." The appeal from the Government of China stated that "opium is like a deadly poison, most injurious to mankind."

Sir Rutherford had no doubt that China was much better before the great consumption of Indian opium began. They were "about the most temperate of races; their food was chiefly vegetable food; they had no stimulants, except a mild tobacco and tea. . . . They have always been known as a most industrious race. . . . They were infinitely better off without the opium."

A very weighty memorial was signed by 5200 medical men in 1892, declaring that the habit of

opium-smoking or opium-eating is morally and physically debasing; that its unrestrained sale is associated with many and grave dangers to the well-being of the people of India; that opium ought to be classed and sold as a poison; and that its sale should be prohibited, except for medical purposes, by the Government of India.

In Chang Chih-tung's book, *China's only Hope*, he states that its use has spread with frightful rapidity and heart-rending results; millions upon millions have been struck down. The author is described by Dr. Griffith John as the truest of patriots and a most able statesman.

Mrs. Bishop (Isabella Bird), who travelled far in China, testified to the enormous risks even of moderate opium-smoking, and to the commercial, industrial, and moral ruin and physical deterioration which follows it.

John Bright said nothing more vicious could be found in history than our treatment of China.

Opium suited for smoking is forbidden to be imported into New Zealand.

In Japan, opium-smoking is illegal, and severely punished. Importation is forbidden.

Some consequences of immoderate tobacco-smoking have been alluded to earlier in this volume; others will be mentioned in the next chapter. It is very significant that its disastrous effects are so far recognised in North America, that forty-two States of the Union have recently prohibited boys under sixteen or seventeen from smoking at all.

CHAPTER XI

Diet in Relation to Disease—Medical and Statistical Evidence on Cancer

The production of disease in general by inappropriate diet, or by excess or deficiency, has been touched upon in the foregoing chapters. Indigestion, and many of the serious troubles consequent upon this: diseases of liver and kidney and brain; gout and many forms of rheumatic illness, are stated by the best authorities to be caused to a very great extent by food or drink wrongly used.

I intend in this chapter to examine some important evidence from many quarters, derived from medical observations and from official statistics, which bears upon the connection of diet and drink with one of the worst of afflictions, which is growing rapidly in nearly all countries where diseases are classified and registered.

In the report for 1902, the Registrar-General of England notices the increase of cancer, which has continued steadily for many years. "At each of the six age-groups of the period under thirty-five years [of age], the registered mortality from malignant disease is increasing, and that not slowly." The total of the deaths due to it in 1902 was 27,872,—that is, 2384 above the average of the previous ten years' corrected average.

In men the great majority of cases were in the stomach, liver, gall-bladder, rectum, and tongue, mouth, lip, and jaw; in women the cases were mostly in the uterus, breast, liver, gall-bladder, and stomach. The cases of the lip being attacked in women were 10 against 191 in men, of the tongue 83 against 625, and of the throat 63 against 228.

In a recent learned communication to the *Morning Post*, it is stated that Dr. Bashford and Dr. Murray, members of the Cancer Research Committee, have confirmed the discovery made by Professor Farmer, Mr. Moore, and Mr. Walker. "The most terrible thing about cancer is . . . that we have been ignorant of the causes of its birth and its growth. Cancer cells behave as if they were the cells of reproductive tissue."

The birth of cancer consists in the application of some kind of irritating stimulus to the ordinary cells. This irritation spurs the ordinary cell into a form of activity that is false to it.

"It does appear as if the irritating stimulus which produced this result might be of the nature of a chemical agency in the blood."

Cancer has been grafted from one animal to another of the same species.

In an article on "Cancer Mortality," by Dr. Alfred Wolff, in the *British Medical Journal* for 9th July 1904, the following statistics of mortality are given:[1]—

England and Wales: Death-rate per 100,000 living.

	Males.	Females.		Males.	Females.
England and Wales	69·1	98·5	Dorset . .	74·9	100·6
London . .	79·4	106·5	Kent. . .	78·4	100·5
Hereford . .	91·9	137·7	Nottingham .	62·6	100·1
Cambridge . .	95·1	133·0	Leicester . .	59·6	98·9
Huntingdon .	96·4	130·0	Lincoln . .	76·2	98·4
Shropshire . .	63·9	128·4	Surrey . .	69·5	97·0
North Wales .	98·1	120·0	Northumberland	73·4	96·4
Somerset . .	78·5	115·0	Rutland . .	126·1	96·1
Cumberland .	72·0	114·4	Yorkshire (East		
Norfolk . .	87·9	113·2	Riding). .	70·8	96·0
Cornwall . .	69·5	112·6	Yorkshire (West		
Devon . .	81·8	112·1	Riding). .	66·3	94·3
Cheshire . .	70·1	112·0	Worcester. .	70·9	94·1
Oxford . .	100·6	112·0	Derby . .	51·9	93·2
Herts . . .	83·2	112·0	Essex . .	56·6	90·8
Berks . . .	88·3	111·8	Lancashire .	59·3	90·5
Hants. . .	84·2	108·8	Yorkshire (North		
Sussex . .	79·4	107·4	Riding). .	77·3	90·4
Warwick . .	72·8	103·7	Westmorland .	98·3	88·6
Suffolk . .	79·0	103·1	Middlesex. .	60·8	82·8
Bucks. . .	83·8	101·6	Durham . .	49·7	80·4
Wilts . . .	66·4	101·3	Stafford . .	48·2	80·2
Gloucester . .	83·4	101·0	South Wales .	57·7	79·8
Northampton .	73·0	100·9	Monmouth .	57·6	78·9

The districts showing high and low mortality were much the same as in the previous year: Cambridge, Huntingdon, and North Wales gave high figures; Monmouth, South Wales, Stafford, and Durham the lowest. Rutland had a very high—the highest—rate for males. But in 1900 the mortality was low in Rutland. Shropshire has a high rate for females, a low rate for males.

In France the mortality was less in 1901 than in 1900. The rate was highest in Paris and the largest towns, decreasing regularly in proportion down to the smallest towns, from 107 to 63. But in Chefs Lieux

d'arrondissement the rate was a little higher than in the towns of between 5000 and 10,000.

The Eure and Loire had the highest mortality, 205, for cancer and tumour, the Nord had the lowest, 90, and the Oise, Nièvre, and Loire Inférieure were all below 100.

In towns of Departments the Gironde showed the highest, 73, and Finistère the least, 39.

As in 1900, "there was a compact area of high cancer mortality extending from the country in the north-east bordering on the Channel, through Paris, and along a strip extending west from that city to the Bay of Biscay." The greater part of Brittany and the south-east region bordering on the Mediterranean were low in mortality.

In Germany, in 1900, the following showed rates far above those of the Northern States :—Baden, Bavaria, the Saxon kingdom, Würtemberg, and Hesse. This was the same in 1899.

From 1892 to 1900, inclusive, the mortality in persons over sixty in Germany was as follows :— German Empire, 416·3 ; Baden, 661 ; Saxony, 647·6 ; Hesse, 624 ; Bavaria, 553·6 ; Alsace-Lorraine, 499·8 ; Würtemberg, 463·9 ; Prussia, 331 ; Saxe-Coburg-Gotha, 256·8.

Thickly wooded and well watered country has an *apparently* excessive mortality. There is an explanation for this. In England the distribution of cancer is very uneven, and varies from year to year.

A very low rate has prevailed along the shores of the Mediterranean ; at Marseilles it was only 52.

In the Special Report of the Registrar-General for Ireland on Cancer, it appears that—

					Per 10,000.
In Ireland,	in 1864	the rate of	mortality	from cancer was	2·7
,,	1871	,,	,,	,,	3·2
,,	1881	,,	,,	,,	3·7
,,	1891	,,	,,	,,	4·6
,,	1901	,,	,,	,,	6·5
In England,	in 1864	,,	,,	,,	3·9
,,	1871	,,	,,	,,	4·2
,,	1881	,,	,,	,,	5·2
,,	1891	,,	,,	,,	6·9
,,	1900	,,	,,	,,	8·3
In Scotland,	in 1864	,,	,,	,,	4·3
,,	1871	,,	,,	,,	4·4
,,	1881	,,	,,	,,	5·2
,,	1891	,,	,,	,,	6·8
,,	1900	,,	,,	,,	8·60

In Austria	the change	from	1891	to 1900	was from	5·4 to 7·0
,, Bavaria	,,	,,	,,	,,	,,	8·9 to 9·9
,, Holland	,,	,,	,,	,,	,,	7·9 to 9·3
,, Hungary	,,	1897	to	1900	,,	2·6 to 3·3
,, Italy	,,	1891	to	1900	,,	4·3 to 5·2
,, Norway	,,	,,	,,	,,	,,	6·1 to 9·2
,, Prussia	,,	,,	,,	,,	,,	4·5 to 6·1
,, Connecticut	,,	,,	,,	,,	,,	5·2 to 6·6
,, Maine	,,	,,	,,	,,	,, (1892)	6·1 to 7·6
,, Massachusetts	,,	,,	,,	,,	,,	6·1 to 7·1
,, New Hampshire		,,	,,	,,	,,	5·6 to 7·1
,, Rhode Island	,,	,,	,,	,,	,,	5·1 to 6·8
,, Amsterdam	,,	,,	,,	,,	,,	8·8 to 9·8
,, Boston	,,	,,	,,	,,	,,	6·9 to 8·1
,, Breslau	,,	,,	,,	,,	,,	8·6 to 10·8
,, Brussels	,,	,,	,,	,,	,,	3·4 to 4·4
,, Buda-Pesth	,,	,,	,,	,,	,,	8·7 to 7·2
,, Copenhagen	,,	,,	,,	,,	,,	13·6 to 13·9
,, Denmark, other towns		,,	,,	,,	,,	11·6 to 11·1
,, Dresden	,,	,,	,,	,,	,,	10·1 to 10·6
,, Dresden, with cases from outside					,,	12·3 to 12·5
,, Munich	,,	,,	,,	,,	,,	12·7 to 11·9 [2]
,, New York	,,	,,	,,	,,	,,	5·4 to 6·7
,, Paris	,,	,,	,,	,,	,,	10·0 to 10·5
,, Philadelphia	,,	,,	,,	,,	,,	5·3 to 5·8
,, Prague and suburbs		,,	,,	,,	,,	9·0 to 8·5
,, St. Petersburg	,,	,,	,,	,,	,,	9·9 to 10 (1899)
,, San Francisco	,,	,,	,,	,,	,,	6·0 to 10·9
,, Stuttgart	,,	,,	,,	,,	,,	7·6 to 12·7
,, Vienna	,,	,,	,,	,,	,,	10·4 to 12·1

In Ireland, both males and females were attacked by cancer chiefly in the stomach.

Farmers and labourers were very largely the victims, but no percentage of deaths in occupations is given.

Kerry had the lowest rate, 2·63, then Mayo 3·64, Clare 3·83, Sligo 3·9, Leitrim 4·13, Galway 4·19.

The West of Ireland generally had a low rate.

In four counties the rate was between 7 and 8, Meath with 7·06, Monaghan with 7·3, Tyrone with 7·33, Carlow with 7·42. In two, between 8 and 9: Londonderry 8·24, Dublin 8·48. And the highest rate was in Armagh with 10·47.

The lowest rate in any district of Armagh was in Tartaraghan, 2·5, next in Lurgan 5·6, and next in Poyntz Pass 6·8. The highest, in Crossmaglen, 17·3, next Loughgall 17, then Tynan 12·8, then Mountnorris 12·7, and then Ballybot 12·2.

In the "Armagh" district of the Armagh Union, cancer is reported by the registrar there to be most common among farmers and labourers.

The registrar of the Loughgall district reports tea-drinking as conducing to the disease by disordering the stomach.

The registrar of the Markethill district suggests, as to the cause of rectal cancer, the use of flour bread and consequent continual constipation, in the place of bread and porridge made from wheaten meal and oatmeal.

The registrar of Crossmaglen attributes the prevalence of the attacks of cancer in the stomach, which is the most common, to the character of the food used.

The registrar of Newtownhamilton attributes to

tea, alcohol, or salted animal food the injuries to digestion which possibly predispose to cancer. Hardly any fresh animal food is used.

At Portadown, the too plentiful use of fatty animal food is suspected.

At Forhill, indigestible food, badly baked bread, and strong tea drinking. At Meigh, improper food causing chronic dyspepsia. At Mountnorris, improper food and tea and alcohol.

A similar report comes from Mullaghglass, where it is remarked that irritation is caused by the great quantity of tea drunk, sometimes seven times a day.

Many registrars remark on the frequency of cancer on the lip from smoking clay pipes excessively, and there seems to be no doubt that this is a common proximate cause. But the majority of cases of cancer are in the stomach or neighbouring parts.

One practitioner mentions that in three cases during three months, each sufferer had lived in penury on dry bread and tea as the chief articles of diet.

The following table shows the increases in several countries during ten years :—

	1891.	1894.	1897.	1900.
Austria . . .	5·4	6	6·7	7
Holland . . .	7·9	8·4	9	9·3
Norway . . .	6·1	7·1	8·5	9·2
Prussia . . .	4·5	5·3	5·7	6·1
Connecticut . .	5·2	5·1	5·8	6·6
Massachusetts . .	6·1	6·4	6·7	7·1
Rhode Island . .	5·1	5·7	6·3	6·8

The most fatal period of age is from sixty-five in women and seventy-five in men. It is supposed that the chief causes include—irritation of the lips from clay pipes ; after-effects of wounds ; long contact with a

cancer patient; chronic dyspepsia and irregular meals; impure water; inherited predisposition; neat alcohol; use of pipes used by sufferers; bad conditions of life and food and residence. A causal relationship has been noticed to idiocy, epilepsy, lunacy, and tuberculosis.

Further observations on cancer in Ireland are contributed by Dr. Hill Climbo.[3]

During the last forty years the death-rate from cancerous diseases in all European countries and in the United States of America has steadily risen, being highest in Bavaria, Denmark, Holland, and Norway.

In Ireland the deaths of males were 45, and of females 55 per cent. Of 1262 deaths of males, in 509 cases the victims were farmers, in 5 sons of farmers, in 302 labourers; these make together 816 cases. Of the remaining third, three-fourths were men in the same class of life.

Of the total number of deaths from cancer, 2893, the digestive system gave 1583 cases—849 of males, 734 of females. Even in several other organs, the parts affected primarily are those engaged in nutrition. Hence there is a strong presumption that it is the *food* which is at fault.

Sites of wounds and injuries are specially liable.

Medical opinion in Ireland considered the local causes to be referable to the climate, dampness, proximity to woods and rivers, geological formation, subsoil contamination, and insanitary environment. The special causes are all dietetic.

Dr. Climbo thinks that the previous low mortality of Ireland, and the increase during the last forty years, point to poverty as a condition of immunity and the habits consequent on wealth as a cause of cancer.

There is no new factor other than the economic one. "Up to the time of the famine, the people lived upon what the country produced—oatmeal porridge, potatoes, eggs, and milk, with fish and home-cured bacon occasionally. Now cheap American bacon and flour pancakes cooked in bacon fat, Indian meal porridge, sweetened with chemically coloured beet-sugars, and boiled tea are the staple food commodities." Porter- and tea-drinking have been substituted for whisky. The consumption of tea is enormous. A labourer, with his wife, buys every week half a pound of tea, at 1s. 4d. the pound; his wages are only 7s. 6d. a week. Very little other flesh than American cheap bacon is eaten by the peasants. It is only half-cooked. It is said that American pigs are fed on the entrails of poultry, and on the offal of cattle, and on diseased carcases. "It is unwholesome animal food which I believe to be the direct cause of cancer."

According to Mr. T. W. Russell, "the baker's cart now goes everywhere." "American flour and bacon are largely used by the poor."[4]

From Clemow's *Geography of Disease* I obtain the following particulars:—

The highest cancer death-rates were in Huntingdon, Cambridge, Sussex, and North Wales; the lowest in Monmouthshire and Derbyshire. The districts of maximum prevalence were Stamford, Bourn, Spalding, Holbeach, Oundle, and Peterborough.

In Scotland the deaths from cancer were, in 1881-90, 580 per million; in 1895 and 1896, 730; in 1897, 770.

In Ireland, in 1871-80, 340; in 1881-90, 410; in 1900, 600.

In France, in 1887-90, 840 ; in 1898, 1050, for *urban* districts.

In Holland, in 1889, 750 ; in 1898, 930.

In Germany, regularly increasing.

Also in Denmark, where, in the urban population, it has risen from 837 to 1054.

In Norway and Sweden there is a similar increase. The rate in Sweden in 1886-87 was 950. Also in Russia there is an increase.

In Switzerland there is a large mortality ; in Greece it is common [in towns ?].

In Italy the rate was 496 in 1896. In Iceland it is very rare, also in Persia, where the Russians and Armenians are most attacked.

In the Caucasus it is not uncommon. In India it is not frequent. In Syria and the Arabian plateaux, very rare or unknown. In Kashmir, rather rare.

In the Faroe Islands, unknown.

In Ceylon the rate was 129 in 1891, 235 in 1893, 177 in 1897.

In Siam and the Laos country, rare ; in the East India Islands and Borneo, rare ; in Java, rare, but occurs among the hill tribes.

In China, cancer is much rarer than in Europe, but there are immense tumours. In Corea, uncommon. In New Guinea, very rare. Only one case was seen among the natives, and this person *had lived like a European.*

In Australia—Queensland, 1893, 284 ; 1894, 358 ; 1895, 417 ; 1896, 392 ; 1897, 391 : Tasmania, in 1894, 500 ; 1895, 470 ; 1896, 580 ; 1897, 480.

In South Australia, 1889, 427 ; 1898, 507 ; 1900, 590.

In New Zealand, 1889, 422; 1899, 633.

In New Caledonia, very rare.

In Africa, rare. Among primitive black races, very rare or unknown.

In Arabia, rare. In Abyssinia, rather frequent; and in Algeria, frequent.

At Lagos, in fourteen years, Dr. Johnston only saw five cases, and in *each of these* the native had lived like Europeans.

In the United States it is very common and rapidly increasing. In Massachusetts, from 195 in 1856 to 700 in 1895. San Francisco, 165 in 1866 to 1036 in 1898. In Boston it trebled from 1863 to 1887. In seven cities it nearly doubled in the years 1870 to 1898 (354 to 664). The Southern States are less affected. In Guiana, not very common.

Throughout Africa, cancer is much less frequent than in Europe. Black races suffer remarkably little from malignant growths.

In Abyssinia and Algeria, cancer is rather frequent, both among natives and Europeans.

In West Africa there are few cases, on the Gold Coast few, and in Mashonaland and Bechuanaland few.

In Nova Scotia, cancer is frequent.

Cancer is probably not common in the West Indies.

In Central America, on the whole, comparatively rare.

Rare in Guatemala, 42 per million.

In Brazil, common in some provinces, at Buenos Ayres, particularly high. In Uruguay, frequent, 447 per million in 1897.

In Siam and the Malay Peninsula, rare.

In Borneo, uncommon. In Servia the rate was 67. In Turkey, rather uncommon. In Persia, very rare. In Russia the rate is rising.

The principal increases in [then] recent years were in the following countries :—England, Scotland, Ireland, France, Holland, Denmark, Sweden, Norway, and perhaps Russia ; in Australia, New Zealand, parts of Canada and of the United States.

Mr. C. P. Newcombe contributes the following observations in his small book on *Cancer* :—

The cancer deaths or malignant disease deaths in England and Wales were, in 1900, 26,721 ; in 1901, 27,487 (10,891 males, 16,596 females).

Compared with the decennial average rate of the last ten years the increase in males is 16 per cent., in females 9 per cent.

There is rather a large difference between counties. Thus the mortality in Nairnshire has been 9·73, in Clackmannan 5·41.

Dr. James Braithwaite, of Leeds, asserts that there are four factors which originate the disease—excess of salt, excessive feeding, particularly on flesh, senility, and local irritation.

In the province of Salzburg is found the chief mortality from cancer in Austro-Hungary.

The cancer deaths have doubled in England and Wales since 1879. Mortality—1881, 13,542 ; 1901, 27,487.

Amboise Paré wrote (1510–1590) : "A cancer is made more fierce and raging by meats inflaming the blood, by perturbations of mind," etc.

Dr. W. C. Lawson, in the *British Medical Journal*, lays stress on "unduly high-blood pressure among

civilised communities living hurried lives and addicted to stimulants and flesh-eating."

Dr. Douglas Macdonald of Bettwsycoed: "I have remarked in many cases of cancer an excess of uric acid and many cases of acid dyspepsia preceding cancer of the stomach." "The Welsh peasantry live chiefly on tea and bacon. . . . Tea is, I think, a prolific cause of uric acid. The consumption of tea and meat has increased *pari passu* with the increase of cancer."

Dr. Haig has long thought that carcinoma may have its way paved for it by the chronic and recurrent irritation produced by urates in the system.

Sir William Banks charges the main evil upon what is called "good feeding." The most numerous victims of cancer are well-nourished persons, "high livers." Sir James Paget's treatment of cancer first gave him the idea of excessive animal food, etc., being a cause. "Our better classes eat infinitely too much."

The whole process, in Mr. Newcombe's opinion, of carrying animals across the sea, the slow and intensely cruel method of slaughter, all tend to vitiate and turn to poison the blood of the terrified victim.

Dr. W. R. Williams stated in the *British Medical Journal* of 20th September 1902, that he ascertained from Dr. Engel of Cairo, then in charge of the Egyptian vital statistics, that of 19,529 deaths among natives in Cairo in 1891, only 19 were returned as due to cancer, or 1 in 1028. In England during the same year the deaths were 1 in 39. Of 12,950 patients in the Kasr-el-Aini Hospital during 1889–91, only 77, or 0·6 per cent., were affected with cancer. In London general hospitals during the same period, the proportion of cases was 3·5.

Cancer is very rare in Tunis, Algeria, and Morocco, and on the Spanish Mediterranean littoral, very rare. In Sardinia the rate for 1889 was 1·7 per 10,000 living, in Calabria 2·4, in Sicily 2·8 ; in Corsica, about the same.

The conditions unfavourable to cancer, in Dr. Williams' opinion, are extreme frugality, little flesh food, and open-air life.

The negroes of North America had little cancer while they lived frugally and worked hard; now, with altered habits, they are much more subject to it.

In Davidson's *Pathological Dictionary* it is stated : Cancer is rare in Lower Bengal, not common in the Deccan tableland. In Hyderabad, in 1886, out of 2637 operations in hospital only 2 were for cancer.

In Bombay, in 1875 the deaths from cancer were 1 in 10,000 against 280 in 10,000 in England. The Mahometans in India eat flesh, but much less than Europeans.

In Persia, cancer is rare, and in Central and East Africa, very rare. In Jamaica, not common ; death-rate 2·19 per 10,000, one-fifth that of England. In Mauritius, very rare ; Turkey, very rare ; Samoa, rare —1 to 8750, as against 1 to every 1306 in England. In Ireland, in those parts where the food is buttermilk, potatoes, and Indian meal, the rate from cancer is one-quarter that of the richer Armagh.

Dr. John Bell, about a hundred years ago a professor in London, wrote that a careful adherence to a vegetarian dietary tended to prevent cancer.

Professor Traill, U.S., wrote that "the hunger cure is an indispensable auxiliary, or, perhaps, the leading remedial measure."

Sir James Paget advised a patient "to try and starve herself."

Dr. George Black, of Torquay, considers a vitiated state of the blood as a cause, and most strongly recommends a diet of fruit, grains, nuts, and vegetables. "I cannot express the gratitude I feel, nor the hope that has been begotten in me, from what I have myself seen by the adoption of such a regimen, and I am only expressing a fact when I say that on such a diet I have obtained results the like of which I had not only never experienced in twenty-four years of practice, but never even dreamed to be possible."

The dietary recommended by Mr. Newcombe, as drawn up for him by a physician of high repute, is: porridge, various; fresh and stewed fruits; golden syrup, honey, fruit juice; granose flakes, biscuits; salad, lettuce, tomatoes, cress, with salad oil and lemon juice; vegetable soups, with rice; vermicelli, tapioca, lentils, and pea flour; vegetables "conservatively" cooked; vegetable pie, almond and walnut butter, unleavened bread.

Avoidance of tea, coffee, cocoa, alcoholic liquors, all flesh foods and substances, such as beef-tea, lard, dripping, suet, etc.; and two meals only in the day are recommended.

Mr. Frank C. Madden, F.R.C.S., Professor of Surgery, Egyptian Government School of Tropical Medicine, Cairo, referring to Dr. Dalgetty's experience of the extraordinary infrequency of cancer among the Hindus and Mussulmans in Adampore,[5] wrote to the *British Medical Journal* of August 3, 1900: "I believe I am right in saying that the consensus of opinion among medical men in Egypt is that cancer—

more correctly speaking, carcinoma—is never found amongst the black races of that country. These include the Berberis and the Soudanese, who are all Mussulmans, and who live almost entirely upon a vegetarian diet. Cancer is fairly common, however, amongst the Arabs and Copts, who form the bulk of the population of the native Egyptians, and who, strangely enough, live and eat much like Europeans."

Dr. Lucas Champonnière, appointed by the French Academy of Medicine to investigate the causes of typhlitis (or appendicitis), recently reported that in his opinion it is largely due to flesh-eating. Dr. Perks, in the course of many years' experience as chief medical officer of large hospitals, did not, so far as he remembers, have any instance of appendicitis in a non-flesh-eater, and the experience of a medical friend during twenty years' practice among abstainers from flesh is similar.

In his book on the *Diseases of Warm Countries*, Dr. Scheube states that gout is rare or absent in the tropics. In India it is only observed in Mahometans and Europeans, not in Hindoos. In Japan, Dr. Scheube says, "I never observed a case." This immunity is not due to moderate fare alone. In Brazil "the people live luxuriously, and gout is extremely rare."

"Cancer is rare in the tropics." It is met with, but far more rarely than in Europe, in the Antilles (Martinique, Barbadoes) and in India. "In China it is no rarity," and "the same may be said of Japan." The observer had personally operated on many in that country, chiefly for cancer on the female mammary gland. [These cases would probably be among the rich or well-to-do classes.]

Mental diseases are more frequent in Europeans in the tropics than at home.

Sir W. Macgregor, K.C.M.G., C.B., M.D., D.Sc., LL.D., states in his article,[6] "Some Problems of Tropical Medicine": "I do not remember ever to have operated on a Polynesian or Melanesian for cancer, though I had to do so several times on Europeans in Fiji. For nine and a half years I never saw a case of cancer in British New Guinea, but at the end of that time there occurred an example of encephaloid cancer of the tibia in the person of a Papuan that had for seven or eight years lived practically a European life, eating tinned Australian meat daily. . . . The Polynesian and the Papuan are practically vegetable feeders."

The following summary of the increase of cancer in some foreign countries was given in 1903 :—

Country, State, or City.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1901.
Austria . . .	5·4	5·7	5·9	6·0	6·3	6·5	6·7	6·9	6·9	7·0
Bavaria . . .	8·9	8·5	9·0	9·3	9·5	9·5	9·7	9·7	10·2	9·9
Holland . . .	7·9	8·0	8·1	8·1	8·4	8·8	9·0	9·3	9·6	9·3
Hungary . . .	...	...	...	...	...	...	2·6	2·6	2·5	3·3
Italy . . .	4·3	4·3	4·3	4·5	4·8	4·9	5·0	5·1	5·2	5·2
Norway . . .	6·1	6·3	7·0	7·1	7·1	8·1	8·5	8·4	8·9	9·2
Prussia . . .	4·5	5·0	5·1	5·3	5·3	5·5	5·7	5·7	6·1	6·1

In England and Wales the largest increase in cancer mortality, according to age, has been in the third quinquenniad in males and in the first among females (0 to 5 years old).

The Official Report on Vital Statistics for New South Wales, 1899, gives the following figures :—

Cancer death-rate per 10,000 of population—

1857–59.	1860–64.	1865–69.	1870–74.	1875–79.
1·20	2·17	2·36	2·42	2·57

1880–84.	1885–89.	1890–94.	1895–99.
2·68	3·53	4·27	5·08

Phthisis and nervous diseases have diminished.

The proportion of insane has increased since 1890, although since 1893 the influx of insane patients was stopped. Suicide has steadily increased.

In 1899 the cancer rate was 5·66, the highest on record. The proportion since 1856 has more than trebled.

In the Registrar-General's report for Queensland for 1902, published in 1903, it is stated that "Cancer, fourth in order of fatality, contributed a greater number of deaths than ever before. . . . The number was 4·59 of all deaths, and 0·55 per 1000 of the mean population."

In the Statistics of New Zealand, 1901, given in the Official Report, 1902, appears the following :—

	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Cancer deaths . .	307	332	408	383	389	395	471	468	430	515
Pneumonia . .	245	350	322	371	285	355	330	389	314	438
Diseases of Urinary System . .	172	197	210	231	219	237	274	255	287	284
Percentage Cancer .	4·75	4·91	5·9	5·58	6·05	5·99	6·5	6·09	5·97	6·75

Dr. G. Cooke Adams, C.M.Q. Univ. Cam., L.R.C.P., L.R.C.S. Edin., contributed an article on "Cancer in Australia" to the *Lancet* of 13th February 1904.

The following table shows the cancer death-rate

per 100,000 living among the Australian-born, the British-born, and the people of all nationalities :—

Year.	Total Population.	Australian.	British.	All Nationalities.
1851	403,889	...	28 (1856)	14
1861	1,153.973	5·6	30·5	19
1871	1,668,377	9·7	56·7	25
1881	2,252,617	16·8	72·9	32·6
1891	3,183,237	19·8	119·8	45·9
1901	3,771,715	22·6	203·1	57·3

The corrected cancer death-rate for 1900, for persons above thirty-five, per 100,000 living above thirty-five, was, for the Commonwealth, 195·3 ; for metropolitan districts, 326 ; for country districts, 134 ; for native-born, 58·2 ; for British- and foreign-born, 137·1.

The proportion to 100 deaths from all causes, above thirty-five, was, for natives, 6·3 ; for British, 12·5 ; for foreign, 11·8, to each 100 born of each class. The proportion for foreign-born Germans was 11 ; French, 16·6 ; Austrians, 16 ; Russians, 5·4 ; Swedes and Norwegians, 15·6 ; Chinese, 5 ; Italians, 5 ; United States people, 2.

Victoria shows the highest rate of all the States, West Australia the lowest ; its population is young.

The death-rate in various countries for 1900, per 100,000 living, was—

In England and Wales	82·8	Italy	32·1
Scotland . . .	81	Switzerland . . .	132
Ireland . . .	61	Holland	91·3
France (towns) . .	104	Norway	84·5
German Empire .	72·7	United States (registration	
Austria . . .	70·4	area)	60

In France tumours were counted in.

The aboriginals of Australia are practically immune.

A great part in cancer production is played by syphilis. In India, cancer is prevalent among the kangri-wearers, due to the constant irritation of the kangri on the skin.

Among natives of India, cancer of the lip is uncommon, owing to their not smoking pipes, but of the mouth very common, owing to their habit of chewing irritating substances, such as betel leaf, tobacco, etc. "Next to hereditary causes, prolonged local irritation is the principal exciting factor in the causation of malignant disease." Neglected and untreated illness, such as syphilis, rheumatism, alcoholism, gout, tubercle, etc., and sugar and alcohol play a large part. More beer is drunk in metropolitan than in country parts of Australia, and more by British- and foreign-born than by native-born. In France the beer-drinking have a much higher mortality from cancer than the wine-drinking populations.

Dr. Adams believes that cancer is due to "malignic acid," depending on the condition of the parents at the time the diathesis is transmitted. Burns, scalds, lesions, irritating causes of all kinds, start the tumour; the malignic acid converts the weakened into malignant tissue.

The average cancer mortality in North Wales has doubled in the last thirty years. There has also been increased mortality from digestive disorders, due probably "to a change for the worse in the dietetic habits of the people." Formerly oatmeal was a staple, now this is replaced by strong tea, white bread, and butter, etc.[7]

Mr. Elsworth Olsen's advice for preventing and curing anæmia would probably, from a comparison of evidence, contribute to the prevention of cancer: out-

door exercise, pure air, water, sunshine, wholesome nourishing food, such as fruit, bread, grains, nuts, milk, and eggs. Alcoholics, tea, coffee, condiments, pepper, pickles, sweets, pastries, rich and greasy foods, must be avoided.

The *Philosophical Magazine*, in an article referred to by the *Lancet*,[8] notices the extraordinary number of cases of cancer and scirrhous complaints in the neighbourhood of Tunbridge Wells, which has engaged the attention of medical men there. "A similar remark appears to apply to other counties, where the poor feed much on dried hog's-flesh and can get but little vegetable food."

The medical officer of health for Spalding, Lincolnshire, reported that "cancer is steadily increasing from year to year." During the twelve months ending in March 1904, 11·65 of all the deaths in the district were from cancer.

Cancer has been attributed by two French observers largely to the use of pork. They state that orthodox Jews who adhere strictly to the laws of Moses, are rarely the subjects of cancer. A physician who practised many years among the Arabs, who use no pork and little flesh, had no cases of cancer. A similar report is given of the Indians of Old Mexico.[9]

In the same magazine I find that Dr. M'Gugan, of Kalamazoo Insane Asylum, states that epileptic fits are doubled in number when his patients are fed on a flesh diet.

In the first annual report of the Cancer Research Fund, London, it is reported that inquiries are being made into the alleged absence of cancer in New Guinea, and its rarity in the Malay Peninsula.

In treating of "Dangerous Trades," Mr. Thomas Oliver states that glassmakers are subject to cancer, and to urinary, digestive, and circulation diseases. These are partly produced by the high temperature, lead powder, and bad ventilation.

Lead-workers die at a rate 90 per cent. above that of other workers. The rate of cancer mortality for chimney-sweeps is 156, compared with 44 for occupied males, their intemperance mortality is four and a half times the ordinary. Eighteen out of 61 cases of cancer in sweeps are noted as "sweeps' cancer." There has recently been a great abatement of their cancer mortality.

Wool-workers die at the rate of 10 to 22 in excess from cancer, nervous, respiratory, and urinary diseases. They are not specially intemperate. From digestive diseases their mortality is one and a half times the ordinary.

Bookbinders have an excess of cancer, urinary, circulatory, and respiratory diseases. Shoemakers have a mortality from cancer 14 per cent. above the average. Cancer and ulcers are frequently found among gardeners and others who have to handle soot. Sweeps in foreign countries are specially protected, and do not have an excess of cancer. Workers in tar and paraffin are subject to sweeps' cancer, and workers in anthracene to warts. Hard or stone-coal soot, crude paraffin, and brown coal-tar seem to have a pernicious effect. Butlin concluded that by the application of certain substances for years, the skin is prepared for cancer.

Sir Thornley Stoker, surgeon to the Richmond Hospital, Dublin, states in an article on "Cancer on the Lips," that "in almost every case the use of the

pipe is the exciting cause." Often the pipe is short, with a broken end; sometimes the sharp edges of broken or decayed teeth are the exciting cause. Out of 350 cases operated on, only three were women, and these were assiduous smokers.[10]

According to Dr. W. Roger Williams, of the Middlesex Cancer Hospital, there is an apparent connection between arthritism, that is, rheumatic conditions of constitution, and cancer.

Thus Pierre Buonaparte died of heart disease following rheumatic fever; Napoleon III. from stone; Jerome and his son Napoleon suffered from diabetes; Napoleon Buonaparte and his father, his brother Lucien, and his sisters Caroline and Pauline, all died from cancer in the stomach.

"Cancerous tumours consist almost exclusively of proteid or albuminous substances, and it seems not unreasonable to suppose that they may be caused by excess of these substances in the body." . . . "When excessive quantities of such highly stimulating forms of nutriment are ingested by persons whose cellular metabolism is defective, there may be thus excited, in those parts of the body where vital processes are most active, such excessive and disorderly cellular proliferation as may eventuate in cancer." Dr. Williams's record of cases in his own practice shows a large preponderance of cases of heart disease among parents of breast-cancer patients.[11]

Dr. Haig has recently given some interesting views[12] of possible causes of a tendency to cancer. Lead and lime are found, he says, in many drinking and cooking waters, and lead, mercury, copper, zinc, and tin in many preserved foods. Zinc, copper, gold,

and silver are used in medicine, also lead and iron. In constitutions "full of uric acid" these substances produce much local precipitation. "It is in the well-fed and highly nourished that the greatest liability to cancer is found." A very high cancer mortality was found in a district where the drinking water was very hard, and where high feeding with rich food and wine was habitual.[13]

Dr. Haig sums up: (1) Cancer tends to affect seats of local irritation or ulceration. (2) Uric acid is responsible for more widespread and chronic local irritation in all the tissues of the body than any other known substance. (3) Insurance statistics seem to show that cancer is increasing side by side with many other diseases which are no doubt due to uric acid. . . . (4) Countries where the diet is to a great extent uric-acid-free suffer but little from cancer. . . .

Dr. Verneuil of Paris has stated that his observations convinced him that the regular use of flesh meat caused the disease.[14]

Dr. Keith has stated that high living, wine, and animal foods "aggravate in an extraordinary manner all the symptoms arising from this terrible disease," and that he knows of no class of cases where the benefit that follows a change of living is so marked.[14]

Sir W. Banks, a cancer specialist of thirty years' practice, asserted that the most numerous victims are well-nourished persons with plenty of beef and fat about them, and often a fine healthy colour.[14]

In England, in 1901, the deaths from cancer in the tongue, mouth, pharynx, larynx, and trachea were—of men, 1252; of women, 273. There can be

no doubt that the irritation of smoke and pipe stems is here a main cause.[14]

Dr. Kellogg says: "That the free use of flesh food is a predisposing cause of cancer cannot be doubted. The natural and non-flesh dietary is one of the most effective measures that can be adopted for its prevention and cure."[15]

Dr. Rabagliati: "My view as to the causation of cancer is that from first to last it is a disease of overfeeding." A very large amount of disease in general is due to mal-assimilation, generally from excess of food. Women have cancer in a larger proportion than men; one reason is, that they so frequently indulge in small extra meals, often eating five or six instead of three times a day. All classes of people indulge in more meals than their predecessors, and are therefore suffering from more colds and more cancer. Bread, sweets, puddings, cakes, may be more harmful than flesh thus indulged in. School children should have only three, or, still better, two meals a day, with *nothing* between. After fifty-five years of age, one meal a day should be taken, up to seventy-five. A yearly fast, for say six weeks, is of great value.

Dr. J. E. Gemmell, President of the North of England Gynæcological Society, in remarks upon Dr. Ragabliati's contribution, said that from his own observations, well-nourished, well-living persons were more attacked by malignant disease than those who were not so well nourished, and that such persons more rapidly succumbed to the disease.[16]

Dr. Rabagliati, in a private letter,[17] affirms that "wrong feeding is far and away the commonest cause

of illness. It is not poverty that is threatening to ruin England, but wealth. It is not too little food—it is too much. . . ." There is too little peace and too much racket. It is these things which have destroyed all civilisations.

In support of Dr. Rabagliati's contention, above summarised, many striking cases and "many closely reasoned arguments were adduced."

The Distribution of Cancer in Relation to Food and Drink.

In recent years the rate of prevalence of cancer has risen steadily and fast in most countries for which statistics are available. For comparison of the rates with the nature and amount of certain kinds of food and drink, the earlier years of the present generation are more valuable than the later, because the differences in diet have decreased with the increase of trade and with the spread of habits of life from one country to another; the effect of previous differences consequently becomes less distinct than formerly.

In 1850-59 the rate, according to Hirsch, was for England 3·3, for London 4·5.

Recent statistics have shown the following counties of England to have a minimum (or low) and a maximum (or high) rate of cancer mortality :—

Low—Men. Staffordshire, Durham, Derbyshire, Leicestershire, South Wales, Monmouthshire, Essex, Lancashire, Middlesex.

Women. Monmouthshire, South Wales, Staffordshire, Durham, Middlesex, Westmoreland.

High—Men. Oxfordshire, Rutland, North Wales, Huntingdon, Westmoreland, Herefordshire.
Women. Hereford, Cambridgeshire, Huntingdon, Shropshire, North Wales, Somerset, Cumberland, Norfolk.

Sussex was included by Dr. Clemow in his *Geography of Disease* as a county having a very high rate of cancer about ten years ago.

The districts of England with highest rates recently, have been Stamford, Bourn, Spalding, Holbeach, Oundle, and Peterborough. Tunbridge Wells has been noted for a very high mortality, also the Thames valley.

In Scotland, Nairnshire has had the highest, Clackmannan the lowest.

I do not see that much is to be inferred from these statistics for parts of Great Britain, except that cancer is more common in the rich and "residential" districts; the remarkably low rate of the mining and industrial counties may probably be explained by the larger relative number of young people among the inhabitants and the smaller number of rich.

But we may observe that the *general* increase in England has accompanied the general increase of income and wages, and of the consumption of luxuries, such as animal flesh, pastry, potted meats, beer, coffee, tea, and tobacco.

The growth of cancer in Ireland has been made the subject of a Special Report by the Irish Registrar-General, containing much valuable information. From this it appears—(1) that the increase has been very rapid in recent years; (2) that the lowest rates were in

Kerry, Mayo, Clare, Sligo, Leitrim, and Galway counties; the highest in Armagh, Dublin, Londonderry, Carlow, Tyrone, Monaghan, and Meath counties; (3) that the farmers and labourers were victims in a very large number of cases; (4) that about two-thirds of the cases were in the organs of nutrition or connected parts; (5) that in a large number of cases of cancer of the lip or mouth, the disease was apparently produced by the irritation of a clay pipe.

There seems to be reason to attribute the rapid increase of cancer in Ireland to the rapid increase in the use of luxuries to which the inhabitants were mostly unaccustomed, or in which they were sparing, and these luxuries have been chiefly the following:—flesh, including potted meats, pork, etc., beer, tobacco, tea, and coffee. The consumption of tea and coffee increased more than in other parts of the kingdom. The number of barrels of beer used grew, in a diminishing population, from 2,633,027 in 1893–4 to 3,358,152 in 1903–4.

The preponderance of cancer cases in the wealthier districts is exceedingly well marked, and I believe a similar preponderance would be found in other countries even during the generation which first largely uses the above-named luxuries. But in England such luxuries as beer and tea, each containing minute quantities of a special poison, are now at least as largely consumed by the families of the poorer classes as by the rich. And in Ireland, Scotland, and parts of England, tea is infused in a more dangerous form—that is, with a much larger proportion of poison and tannin—among labourers, shepherds, mechanics, and factory women than among the highly educated.

Medical evidence has been adduced in Chapter X. and elsewhere concerning the extremely pernicious effect of habitually used tea and coffee in excessive doses. Nansen and other good observers have noted their sad effect on civilised and uncivilised races.

In *France* the lowest rates of cancer mortality were recorded in the Department du Nord, in Oise, Nièvre, Loire Inférieure, most of Brittany, Finistère (in the towns), the south-east, bordering the Mediterranean, and Marseilles, with a rate of 52 against 105 in the Eure and Loire.

The highest rates were in Paris and large towns, Eure and Loire, Gironde in towns, and an area extending in a strip from the North Sea through Paris to the Bay of Biscay.

The fare of the large towns and of the richer districts includes abundant flesh, wine, spirits or beer, coffee, liqueurs, and tobacco. The fare of Brittany, Finistère, and South-East France, including Marseilles, was more frugal, with much less flesh and coffee.

The fare of Brest was—bread, butter, bacon, coffee, and soup; and of towns in Finistère generally—bread, potatoes, water, wine, spirits, fish, vegetables, etc. In most of Brittany, the common food was vegetables, bread, fruit, curdled milk, pork, etc.; a little flesh, wine, and cider. In South-Eastern France workmen were very abstemious, but more flesh is now eaten. (For the fare of Marseilles and Nice, see pp. 149, 150.)

In *Spain* the cancer rate appears to be very low. The fare of the majority of the people has been frugal, —bread, fruit, vegetables, wine, water, oil; but the consumption of flesh must be rapidly increasing if the statistics of food supplies are correct. Tea and coffee

are very little used. The tobacco smoked is slightly more per head than in England.

In *Germany* as a whole the rate is high, but the differences between the States are very considerable. The diet on the whole is mixed, and commonly consists of much flesh, especially pigs, coarse bread, vegetables, beer, and coffee. But the poorer classes in many parts do not eat so much flesh as the English. The potato is a staple in a large part of Germany, especially Prussia and Silesia. The consumption of this root appears to be much larger than in any European state except Belgium, but probably much of the produce figured in the statistics is used for cattle.

The consumption of flesh is about the average for Europe, of coffee and tea rather high, and of tobacco very high.

The following states have a low cancer mortality for Germany :—Prussia, Saxe-Coburg-Gotha (lowest). The diet of the latter was porridge, dumplings, potatoes, bread, beer, very little flesh ; and of Prussia, mixed flesh and vegetables, little fresh meat, bread, beer ; in the country, little flesh, much bread, potatoes, and vegetables, and beer or spirits in moderation. At Dantzig, the diet was rye bread, potatoes, milk, vegetables, pork, beef (flesh 100 lb. per head), a little sugar ; at Königsberg, East Prussia, bread, potatoes, peas, bacon, vegetables, fish, chicory, coffee ; in Pomerania, North Prussia, at Oels, corn, peas, potatoes, butter, flesh (sometimes), salt, beer, brandy ; at Standel and Wernigerode, rye, potatoes, cabbages, milk, butter, salt—beer and coffee were generally used in moderation. The Official Report on Prussia stated

that half the families of the artisan class lived poorly : "Fresh meat is an exceptional luxury, and indulgence in spirituous liquor beyond their means." (1870.)

The following states had a high mortality :—Baden, Bavaria, Saxony, Hesse, Elsace-Lothringen, and Würtemberg; also the following towns: Munich, Dresden, Breslau, and others.

In Bavaria and Munich, with their exceedingly high rate, the fare was formerly simpler than at present; for some time past, bread, pulse, fruit, and vegetables, and beer have been supplemented by a copious addition of flesh in the richer parts. Beer and coffee have been very largely drunk for a long time, and the tobacco consumption is also large. The amount of beer consumed is the biggest in the world.

In Baden the consumption of flesh, beer, and coffee is large in the richer districts, and these two beverages are everywhere in use.

I have no particulars for Elsace-Lothringen except that the consumption of beer, though increasing and large, is much below that of Würtemberg. In Würtemberg, with a high rate, the common diet is flesh, ham, sausages, bread, cheese, and weak beer and coffee, and no doubt potatoes and other vegetables. The beer consumption is very large, but less than that of Bavaria.

In Hesse-Darmstadt, with black bread, vegetables, some flesh, etc., for food, probably beer and coffee are common beverages.

Even in 1871-83, according to Hirsch, the cancer rate of Stuttgart was 6·3, of Bremen 8·1, of Hamburg 7·6, and of Berlin 5·7. At Frankfort the rate was

stated to have diminished from 1863 to 1883. Frankfort is very largely inhabited by Jews.

It appears that in Germany, as a whole, the cancer rate is highest in the richer districts, and where flesh, especially pork, beer, and coffee are most largely consumed; but the indications are not distinct. A note on some of the peculiar properties and effects of Bavarian beer will be found in the chapter of Addenda.

In *Austria* the rate was high, similar to that of Germany, in 1900. The consumption of flesh was moderate, like that of Germany, of tea and coffee very much lower, of tobacco the third highest in the world. In 1870 the diet of the labouring classes was described as consisting of pork, flour dumplings, bread, cheese, and eggs. There are great differences—in Tyrol the peasantry ate a good deal of flesh, but the wood-cutters lived on farinaceous food, while in Upper Austria large numbers lived chiefly on vegetables. The rate is high in the beer-drinking parts. In Salzburg province, where the cancer rate is high, much flesh, pork, and salt is eaten, and beer is very largely drunk. —(Wolff.)

In *Hungary* the rate was very low. The diet was chiefly bread, fruit, potatoes, and occasional vegetables. The Polish and Hungarian peasants lived almost entirely on oatmeal bread and potatoes, Beer, tea, and coffee were little used. The fare among well-to-do people seems to be most excellent and various, and includes many kinds of loaves, rolls, and cakes, chestnuts, nuts, plums, fruit salad, whipped cream, many kinds of fruits, many kinds of vegetables, chocolate, melons, poultry, etc. Figs and prunes,

and curd from skimmed milk, are much eaten by all classes.

It is to be observed that in Austria a high rate, and in Hungary a low rate, is found with a low consumption of flesh. But among the richer classes in Austria, and some of the peasant districts, the flesh consumed is much in excess of that consumed by similar classes in Hungary. Beer is apparently much more drunk in Austria than in Hungary.

On turning to an old copy of *Public Health* for 1889, I find that according to the last British Consular Report of that time, the Hungarian peasantry were "from necessity vegetarian." The chief article was the potato. Green food, vegetables, and millet formed about a fourth of the food, and potatoes a fifth. Fasts are strictly observed in the Greek Church. Corn brandy is largely drunk.

In *Italy* the cancer rate is medium. The people are generally frugal. The amount of flesh consumed was moderate, of sugar, tea, coffee, and intoxicants small ; the tobacco was medium, a little below that of England. The upper classes in Italy eat a large amount of flesh. The daily energy of food consumed, in foot-tons, is extremely small. Bread, macaroni, vegetables, flesh, maize, water, and wine are the common fare in most parts.

Hirsch gives the rate for Italy in 1881-3 as 6·1, for Lombardy 9·3, and for Sardinia 2·0. If these figures are correct, mortality has not increased in the last twenty years.

In *Holland* the cancer rate was very high. The amount of flesh consumed per head is not very large ; pork is a common food, coffee is drunk in very large

quantities, and similarly the consumption of tobacco much exceeds that of any other nation. The food-energy is very high. In the Netherlands, in 1869-79, the rate of cancer was 4·9, in Nordholland 5·5, in Drenthe, 3·1.—(Hirsch.)

In *Belgium* the cancer rate was rather low. More flesh is eaten than in Holland, much less coffee is drunk, but still a large quantity per head ; the beer consumption has lately risen to a very high figure, and the tobacco consumption is large—double that of England. In Brussels a common diet was bread, lard, potatoes, vegetable soup, milk, weak coffee and chicory. The food-energy is extremely high. In Brussels, in 1864-73, the cancer rate was 3·9.—(Hirsch.)

In *Norway* the rate for cancer was very high, the statistical figures of flesh, coffee, and salt consumption large. Since a large part of the population eats little fish or flesh, we must conclude that the richer classes, especially in towns, eat both fish and flesh in exceedingly large quantities. This conclusion may also be derived from the observations of travellers. Alcohol in the form of spirits was not largely drunk, except in certain towns and districts. Cancer is found even in remote dwellings on the fiords. In 1862-66 the cancer rate was 5·2, in Christiania 7, in Trontdjem town 9·9, in South Bergen 3·8.

In *Sweden* the cancer rate was very high. Flesh is eaten to a moderate amount ; coffee, tea, and tobacco are largely used. The people generally live on a simple fare. There was much alcoholic drinking. According to the Official Report, little meat was eaten by the general population, except smoked pork or salt herrings.

In *Denmark* the cancer rate was very high. There is a moderate amount per head of flesh-eating, a very large consumption of coffee and intoxicants, and a food-energy value higher than that of England. The Official Report stated that the Danish workman was less frugal than the German, that cookery was bad, and the condition of Copenhagen insanitary; the average cubic space per head was 213 feet only.

In *Switzerland* the cancer rate was very high. Flesh was eaten in very moderate quantities, excluding strangers; tea and coffee were much used, and the figure for tobacco was among the highest. The food-energy was low. The common diet is frugal, and largely consists of bread, milk, cheese, and coffee. I find, however, in the Official Report (1870), that "meat is the staple of the working man's food." This, no doubt, refers to the towns, where the flesh consumption is very large.

In *Portugal* the cancer rate was low. Flesh consumption was rather low, tea and coffee very low, tobacco, probably like Spain, rather high. Food-energy low. The common fare was frugal and largely vegetarian.

In *Servia* and in *Roumania* the cancer rate is apparently low. The consumption of flesh is not remarkably high in the statistical tables, slightly exceeding that of France. Tea and coffee extremely small. Food-energy low. In the Carpathians the diet is plain and vegetarian; in the low country a good deal of beef and mutton are eaten. The staple of the Roumanians consists largely of maize, fruit, seeds, and milk. Many of the Magyars live on fried potatoes, cucumbers, bread, and coffee.

In the *United States* the cancer rate is high,

especially in the cities. Here, again, we must remember that the rate would be still higher if the towns, and, indeed, the whole country, did not contain a disproportionate number of young people. San Francisco has a particularly high rate.

The consumption of flesh, of tea and coffee, especially coffee, and of tobacco, is exceedingly large, but of intoxicants much below that of England. Coffee-drinkers in the United States use a larger amount per head than almost any other people in the world. On the other hand, there are millions of rather frugal members of the community—immigrants from Europe, negroes, etc. The cancer rate among negroes was very low. Of six Eastern States named in the Irish Report, Maine has for some years had the highest rate, and Michigan has the lowest.

In *Canada* the flesh eaten is much less, the tea and coffee much less, and the tobacco less than half. The cancer rate is considerably less than in the States. In both countries young immigrants are numerous.

In *New South Wales* the cancer rate, though high, is not among the highest. The amount of flesh consumed was extremely large, nearly double that of the United States, of tea and coffee the amount was large, but not quite the largest. Strong tea is the constant drink of the majority. The tobacco consumption is much larger than in either England or France.

It is very remarkable that French, Swedish, and German settlers have a much higher cancer mortality that the white Australians, native born; while the settlers from the United States, Italy, and China have a lower mortality. English settlers are more attacked than the native colonists. The Australian aborigines

have been free from the disease. I believe it is the case that the settlers with the higher rate are large beer-drinkers.

In *New Zealand* the cancer rate is high for a new country. The diet is very largely of flesh, and much tea is drunk, as in England or Australia.

South America has a very high cancer rate in parts of Brazil, in Buenos Ayres, and in Uruguay. In all these there appears to be a very large use of flesh meat. (In Argentina, "three times as much as Englishmen.") In San Paulo, Brazil, black beans, roots, pork, beef, coffee, and spirits are the common diet. In many parts of Brazil jerked beef, mandioca, codfish, rum, and coffee. The Indians of Uruguay in former times lived on fish, venison, and honey.

Central America has a very low cancer rate. In most parts the fare is vegetable, but in Venezuela "as much beef as in Germany" is eaten. Panama has (partly) a diet of "meat and rice" and strong spirits. The cancer rate for these countries is wanting.

Guatemala has a low cancer rate; so has Mexico. Probably the common fare is almost wholly vegetable, as in Colombia. Strong spirits and coffee are common drinks in the towns. Maize and haricot beans, according to the Encyclopædia, are the main sustenance of the people. Cancer is not uncommon in the towns on the high plateau of Mexico.

Arabs and Copts in Egypt have, *for that country*, a high rate. The diet among the rich is like the European. Generally the diet is bread, vegetables, rice, flesh, and coffee.

Egypt has a very low rate as a whole. The

Mussulman black race has hardly any cancer. The diet is vegetarian and temperate, probably without spirits, beer, coffee, and tea.

Similarly *Tunis*, *Morocco*, *Syria*, and the *Arabian Highlands* have a very low rate. In the last, cancer is very rare or unknown. In all these places the diet is spare, and mainly fruit and vegetable, except among the rich.

In *India* the rate is generally low, medium in some parts. The diet is mainly vegetarian, but strong condiments are used by many. Mohammedans and Europeans in India are much more subject to cancer than the Hindoos. But the native kangri-wearers are attacked by the disease. The chewers of betel are attacked in the mouth.

Ceylon had rather a low rate, but not for an Eastern tropical country. The hemp-habit is very pernicious.

The following had a low rate :—Africa, the West Indies, Kashmir, Siam, Laos, the East India Islands, Borneo, Java, New Guinea, Mauritius, Sardinia, Calabria, Corsica, Lower Bengal, Jamaica, Japan, the Antilles, Polynesia, Samoa.

In all these countries the fare was mainly vegetable and simple, and coffee and tea and intoxicants mostly little used. In Corsica, however, coffee is a favourite drink.

In the Faroe Islands, where cancer seems to be absent, fish is the common fare, with bread and a few vegetables. (See Hirsch.)

In Greenland and Iceland, cancer was rare.

In Turkey and Greece, very rare (Hirsch), or rather frequent (Clemow). According to the Official Report, the Greek people were extremely frugal, and on 195

days in the year were restricted to wine, bread, and olives.

In Algiers, rare among the natives, Kabyles.—(Hirsch.)

In Senegambia and West tropical Africa, rare.

In Mexico town and Puebla, more common than on the coast.

In Quito (Ecuador) and Peru, not common.

In Barbadoes and in Brazil (Sta. Catterina), common.

In Martinique, not very uncommon.

Hirsch, from whom the last items are derived, warns his reader against accepting the figures given as inter-comparable. They must be taken with many qualifications.[18]

In a table showing the part of the body affected in a large number of cases, it appears that the cases of lip cancer in males were 247, in females 2; of tongue cancer in males 419, in females 70. These figures are exceedingly significant of irritation as a prime cause.

Abyssinia has a medium rate. The diet includes much flesh and beer.

Parts of China have a medium rate. The diet of China is generally vegetable, but some classes eat much meat (pork, birds, fish, snails, etc.), and drink much tea. Cancer is not common in the country population.

The Tibetans appear to have a very high rate of cancers and tumours. They eat much flesh, and much tea beaten in butter and salt. This last is even described as their staple dish. They also include wheat, rice, vegetables, beer, and brandy.

The towns of Europe having the highest rate during the last ten years were Copenhagen and Munich. Both

of these are in cold climates, both are largely meat-eating, beer-consuming, and coffee-drinking. Vienna, Stuttgart, and Strasburg have recently approached Munich in mortality; in fact, considering that Vienna excludes sarcoma, this town has one of the very highest rates. Only eighteen towns are named in the Irish report; of these Brussels had much the lowest mortality, next came Boston, Buda-Pesth, New York, and Philadelphia. The fare of the workman at Brussels was chiefly bread, potatoes, vegetables, weak coffee and chicory. But the latest statistics show a very large increase of beer-drinking. In Buda-Pesth little flesh was eaten by the industrial classes, but probably much by the well-to-do. Coffee and tea were much less used than in other capitals. In New York, Boston, and Philadelphia much flesh, coffee, beer, spirits, and tobacco were used, but the beer was below the average of English or German towns. In recent years Americans have been showing caution in the use of coffee and tea, and the authorities have warned the population of the States of the effect of coffee on the kidneys and brain.

The Official Report on the condition of the industrial classes in foreign countries, published in 1870, contains the following account of the common fare at Stuttgart:—"The working man has facilities greater in some respects than in England. He is able to indulge in meat as a daily article of food, and even the poorest artisan eats sausage if unable to procure fresh meat. An enormous amount of beer is drunk—about 130 bottles a head, or about 380 bottles a year to each male above fourteen,—a very high rate for a *wine-producing* country."

In Russia the cancer rate is rather low, except in the towns.

In St. Petersburg, according to the Official Report, beer has gained great favour among the mill hands, but otherwise was little drunk. Animal flesh is eaten largely by some classes, little by others, in the towns; in the country that forms only a small part of the fare. Beer and brandy are much less drunk per head than in other countries, such as Germany and Denmark. Flesh is largely eaten by the well-to-do, little by the poorest classes.

The case of Brussels is peculiar. With a low rate (for Europe) of cancer, it has had a moderate rate of flesh and coffee consumption, but has rapidly increased the use of beer since 1889, and now stands far above England. The "coffee" commonly used has been mixed with a large proportion of chicory.

I have endeavoured in the following table to state the rates and amounts, obtained from figures and reports, in general terms, as being less confusing, on the whole, than the actual figures and details, which can be referred to without difficulty in most cases.

It is not possible, in regard to many of the remoter countries included, to give more than an impression of the facts, but I hope that no error has been made of such importance as to vitiate the general results.

Country.	Cancer Rate.	Flesh Eaten.	Coffee and Tea.	Tobacco.	Beer.	Spirits.
England . . .	High	Much	Very much	Moderate	Very much	Moderate
Ireland (North) .	High	Much	Much	Much	Moderate	High
Ireland (South) .	Rather low	Little	Moderate	Much	Moderate	Moderate
Scotland . . .	High	Much	Much	Much	Moderate	High
France (towns and rich districts)	High	Moderate	Much	Much	Little	High
Italy . . .	Moderate	Moderate	Little	Moderate	Little	Very small
Germany . .	High	Moderate	Much	Very much	Very much	Very high
Prussia . . .	Moderate	Moderate	Much	Much	Moderate	High
Saxe-Coburg-Gotha .	Moderate	Little	Moderate ?	Much ?	Much ?	
Baden . . .	Very high	Much	Much	Much	Much	
Würtemberg . .	Very high	Much	Much	Much	Much	
Hesse-Darmstadt .	Very high	Much ?	Much ?	Much ?	Much ?	
Bavaria . . .	Very high	Much	Much	Much	Very much (highest)	
Saxony . . .	Very high	Much	Much	Much	Much	Much
Austria . . .	High	Moderate	Moderate	Very high	Much	Very high
Hungary . . .	Very low	Little	Little	Moderate	Little	Very high
Holland . . .	Very high	Moderate	Very much (highest)	Very much (highest)	Much	High
Belgium . . .	Moderate	Moderate	Much	Much	Very much (recently)	Very high
Norway . . .	Very high	Much	Very much	Much	Very little	Moderate or small

Sweden	Very high	Moderate	Much	Much	Little	High
Denmark	Very high	Moderate	Very much	Much	Moderate	Extremely high
Switzerland	Very high	Moderate	Much	Very much	Little	Moderate
Portugal	Low	Moderate	Very little	Rather high	Little	Very small
Spain	Low	Moderate	Very little	Moderate ?	Little	Very small
Servia and Roumania	Low	Moderate	Very little	Moderate ?	Little	Moderate
United States	High	Much	Very much	Very much	Moderate	Moderate
Canada	Moderate	Moderate	Moderate	Moderate	Little	Moderate
New South Wales	High	Very much	Very much	Much	Moderate	Moderate
New Zealand	High	Very much	Very much	Much	Moderate	Moderate
South America (Brazil, Uruguay)	Very high	Very much	Much	Much		High
Central America	Very low	Moderate	Moderate	Much ?	Little	Moderate
Guatemala	Low	Little	Moderate	Much ?	Little	Moderate
Venezuela		Much				
Russia	Moderate	Little	Little	Moderate	Little	Moderate
Bulgaria	Low	Moderate	Little	Moderate	Little	Very small
Arabs and Copts (Egypt)	Moderate	Moderate	Moderate			
Egypt (Mussulman race)	Very low or none	Very little or none	Very little		None	None
Tunis	Very low	Very little or none	Very little		Little	Little
Morocco	Very low	Very little or none	Very little		Little	Little
Syria	Very low	Very little or none	Very little		Little	Little

Country.	Cancer Rate.	Flesh Eaten.	Coffee and Tea.	Tobacco.	Beer.	Spirits.
Arabian Highlands .	Very low	Very little or none	Very little		Little	Little
India (Hindoos) .	Low or very low	Very little or none	Very little		Little	Little
Mohammedans and Europeans in India	Moderate	Moderate	Moderate	Much	Little	Little
Indian kangri-wearers and betel-chewers	High	None			None	None
Ceylon . . .	Moderate	Very little		Hemp or betel	None	Little (much increasing)
Africa . . .	Low	Very little	Very little	Little	Little	Little
Senegambia and West Africa	Low	Very little	Very little	Little	None	Little
Algiers (native Kabyles)	Low	Very little	Very little	Little	None	Little
Algiers (Europeans) .	Moderate	Moderate	Moderate	Moderate or much	Little	Little
West Indies . .	Low	Little	Little		None	
Kashmir . . .	Low	Little	Little		None	
Siam . . .	Low	Little	Little		Little	
Laos . . .	Low	Little	Little			
East India Islands .	Low	Little	Little			
Borneo . . .	Low	Little	Little			
Java . . .	Low	Little	Little			
New Guinea . .	Low	Little	Little			

New Caledonia .	Low	Little	Little			
Mauritius . .	Rather low	Little	Little			
Sardinia . . .	Rather low	Little	Little	Moderate	None	Little
Corsica . . .	Rather low	Little	Little	Moderate	None	Little
Jamaica . . .	Low	Little	Little	Moderate	Little	Moderate
Japan . . .	Low	Little	Moderate	Little	Little	Little
Antilles . . .	Low	Little	Moderate		Little	
Polynesia . .	Low	Little	Little		Little	Little
Samoa . . .	Low	Little	Little		Little	Little
Faroe Isles . .	Low	Moderate (much fish)				Moderate
Greenland and Iceland	Low	Much or very much	Little			Little
Turkey . . .	Low	Little	Little		Very little	Very little
Greece . . .	Low	Little	Little	Moderate	Little	Little
Bechuanaland, Mashonaland	Low	Little	Little	Little	Little	Little
Mexico, town, and Puebla (Hirsch)	Moderate	Moderate	Moderate	Much	Little	Moderate
Quito, Ecuador (Hirsch)	Low	Little	Moderate	Moderate	Little	Moderate
Peru (Hirsch) . .	Low	Little	Little	Much		
Barbadoes (Hirsch) .	Moderate	Moderate?	Little?	Much	Little	Much?
Martinique (Hirsch) .	Moderate	Moderate	Little?	Much	Little	Much?
Abyssinia . . .	Moderate	Moderate	Little	Moderate	Moderate	Moderate
China . . .	Rather low	Little	Little	Little	None	None

Country.	Cancer Rate.	Flesh Eaten.	Coffee and Tea.	Tobacco.	Beer.	Spirits.
China (richer classes)	Moderate	Moderate	Moderate	Little ; but opium	None	None
Tibet . . .	Very high	Much	Very much		Moderate	Moderate
Korea . . .	Moderate	Moderate	Moderate	Moderate	Little	Little
Persia . . .	Very low	Little	Little	Little	None	None
Persia (Russians and Armenians in)	Moderate	Much or moderate	Moderate	Moderate		
Copenhagen . .	Highest (of towns)	Much	Much	Much	Much	Highest
Munich . . .	Highest	Much	Much	Much	Very much (highest)	Moderate
Vienna . . .	Very high	Much	Much	Much	Much	Very much
Stuttgart . . .	Very high	Much	Much	Much	Much	Moderate
Dresden . . .	Very high	Much	Much	Much	Much	Much
Brussels . . .	Low (for Europe)	Moderate	Moderate	Much	Much ; moderate till recently	Moderate
New York . .	Moderate	Much	Much	Much	Moderate	Much ?
Boston . . .	Moderate	Much	Much	Much	Moderate	Moderate
Philadelphia . .	Moderate	Much	Much	Much	Moderate	Moderate
St. Petersburg . .	Rather high	Moderate	Moderate	Much	Moderate	Moderate

In the following results, derived from the above table, it must be well understood that the accounts of cancer prevalence are not in all cases exact or inter-comparable; and that the accounts of diet which I have gathered cannot be considered accurate, though, on the whole, I am sure they are in this matter practically in the main correct. Moreover, the official statements of beer, etc., consumed cannot give the strength or quality or adulterations in vogue, nor can they say whether the drinking is general or confined to large classes of the people.

There were twelve countries having a very high rate of cancer. Of these, one was very high in flesh consumption, seven were high, four moderate. Five towns had a very high rate. Of the whole seventeen places having the highest cancer rate, thirteen had a high or very high rate of flesh consumption.

Out of the seventeen, three drank very much, and fourteen much, coffee or tea.

As to beer, two drank very much, ten much, two moderately, one little, and one very little; one was doubtful.

Three drank very much, four much, of alcoholic spirits; ten drank in moderation per head, or the amount was uncertain.

Of tobacco, two smoked very much, thirteen much, one moderately, and one was doubtful.

As regards *flesh-eating*, of all the places named, three ate a very large amount of flesh; of these, one had a very high, and two a high, cancer mortality.

Twenty-two ate much; of these, twelve had a very high, four a high, four a moderate, one a low cancer mortality, and one was doubtful (Venezuela).

Twenty-eight ate flesh in moderation ; of these, four had a very high, four a high, twelve a moderate, seven a low, and one a very low rate.

Twenty-nine ate little ; of these, none had a very high or high rate ; four had a moderate, twenty-three a low, and two a very low rate.

Ten ate very little ; of these, one (Ceylon) had a moderate, four a low, and five a very low rate.

As regards *coffee and tea*, eight places drank very largely ; of these, four had a very high, and four a high, mortality. The highest coffee-drinking places had the highest cancer rate. Not one had a moderate or low cancer rate.

Twenty-two drank much ; of these, thirteen had a very high, four a high, five a moderate, mortality. None had a low rate.

Seventeen drank moderately ; of these, two (Austria and St. Petersburg) had a high, nine a moderate, five a low, and one a very low rate (Central America).

Twenty-nine drank little ; of these, five had a moderate, twenty-two a low, and two a very low rate.

Twelve drank very little or none ; of these, seven had a low, five a very low rate, or almost no cancer.

As regards *tobacco*, five used very much ; of these, two had a very high, three a high rate.

Thirty-six used much ; of these, fourteen had a very high, six a high, eleven a moderate, five a low, and one a very low rate (Central America).

Seventeen used a moderate amount ; of these, one had a high, seven a moderate, eight a low, and one a very low rate.

Eight used little ; of these, one had a moderate, six had a low, one a very low rate.

In very many cases the amount of tobacco smoked is doubtful.

As regards *beer*, five used a very large quantity; of these, one (or two counting Munich) had a very high, two a high, one a moderate rate.

Twelve used a large quantity; of these, nine had a very high, two a moderate, one a low cancer rate. (I have counted Brussels for a large beer drinker, with a low cancer rate; but the beer consumption has only recently risen to a very high point, and the rate of cancer is probably also increasing.)

Fifteen used a moderate quantity; of these, two had a very high, six had a high, five a moderate, and two a low rate.

Thirty-one used little; of these, two had a very high, one a high, seven a moderate, fifteen a low, six a very low rate. The high rates appear in France, Sweden, and Switzerland.

Thirteen used very little or none; of these, one had a very high, one a high, one a moderate, ten a low rate, or hardly any cancer. The high rate was only found in Norway, and in a particular class of Indians subject to cancer.

As to *alcoholic spirits*, seven used a very large quantity; of these, three had a very high, two a high, one a moderate, and one a very low rate.

Twelve used a large quantity; of these, five had a very high, three a high, four a moderate rate.

Twenty-four used a moderate quantity; of these, five had a very high, five a high, six a moderate, seven a low, and one a very low rate.

Twenty used a small quantity; of these, four had a moderate, twelve a low, and four a very low rate.

Ten used very little or none; of these, one had a high (but this was a special class of Indians), two a moderate, five a low, and two a very low rate.

The following table shows concisely the incidence of cancer on the nations using the several articles mentioned, and from this the class of Indians alluded to has been excluded; in fact, they should not, any more than the chimney sweeps of England, have been brought into the above enumeration:—

		Very high and high cancer rate.	Low and very low cancer rate.
Countries eating flesh largely . . .	25	19	1
Countries eating little or no flesh . . .	39	None	34
Countries drinking much coffee or tea . .	30	25	None
Countries drinking little or no coffee or tea .	41	None	36
Countries using much tobacco . . .	41	25	6
Countries using little tobacco . . .	8?	None	7
Countries drinking much beer . . .	17	12	1?
Countries drinking little or no beer . .	44	5	31
Countries drinking spirits largely . .	19	13	1
Countries drinking little or no spirits . .	30	None	23

The faultiness of the method I have had to use is here obvious. But nevertheless the indications are extremely well worthy of note.

Taking together the places using flesh, tea or coffee, tobacco, beer, or spirits largely, the accumulated number with a high cancer rate is ninety-four; the number with a low rate nine, or three omitting tobacco: taking the places using little or none of some of these things, the number with a high cancer rate is five, or zero omitting beer; with a low cancer rate one hundred and thirty-one. But taking those few countries which do not use *any* of the articles named, or so little as to be unimportant, it appears that these nine or ten popu-

lations have hardly any cancer or none, except, no doubt, in certain small classes, as among the users of narcotic drugs, condiments, or irritating materials.

Conclusions of value come, I think, with certainty from an inspection of the figures, from a consideration of other known facts, and from medical knowledge concerning the nature of cancer and its development by irritation.

Cancer does not apparently affect wild animals of the kind used for human food, or only to a small extent. It does affect domestic animals living under artificial conditions, with artificial food, and subject to unwholesome surroundings and mutilations. The pig is said to be by far the most commonly subject to cancer of all animals, and the pig is kept in the worst conditions, with every sort of foul and unnatural stuff to feed upon. The wild boar and wild pig live on wholesome fresh vegetables, nuts, and fruits.

The production of cancer in man by such substances as soot, paraffin oil, betel nut, a rough pipe stem, a sharp tooth, or a recent wound, shows that it is a disease caused by the action of an irritant, and especially in predisposed persons. Now there can be no reason why the irritation of a foreign body, or poisonous substance, within the body should not produce cancer as well as on the external surface. And it happens, I think unquestionably, that the accumulation of uric acid or a similar poison derived from the copious use of animal flesh, tea or coffee, besides being capable of setting up some kind of irritation in the body, reduces the resistance of the living elements and increases the nervous weakness. The body becomes predisposed. The poison contracted

in the course of years by excessive tea, coffee, or tobacco is known to produce extremely serious effects in many cases on the constitution, and the effect of excessive beer, often containing arsenic or other harmful ingredients, is also known to be pernicious. Diffused goutiness, if such an expression may be used, and rheumatic tendencies, accompany the excessive ingestion of food, with the substances in the list, except, perhaps, such spirits as brandy and whisky. A consideration of the serious diseases produced by these articles, including tobacco, gives no room for doubt that the constitution must become more subject to nervous breakdown, brain disturbance, and susceptibility to wounds and irritating poisons than the healthy communities which have either cut them out of their dietary or never employed them. It has been proved in our campaigns against various frugally living races, like the Soudanese, that they recover most remarkably from severe wounds. Their blood and tissues are sound.

The above tables may be inconclusive. But we may observe that in Asia, in Africa, in the United States, in South America, in Europe, and in every part of Europe, taken separately, cancer prevails where these things have been largely used, and is rare or absent where they are not used. This cannot be accidental or due to other accompaniments of civilisation, for other conditions may be equal or unequal. Moreover, in any community such as a monastery or religious association, living in a primitive and frugal way, cancer is rare. Recent communications to me from the heads of religious orders strict in diet are clear on this point, as already indicated in previous chapters.

Competent and experienced medical authorities in

hospitals assure me that cancer is most common among highly nourished persons.

Further, though the increase of cancer in rich countries may not be so great as figures indicate, there has certainly been an increase corresponding closely with the increase in flesh-eating and in the use of stimulants and tobacco. In countries not sharing in the uric acid or poison-producing dietary, the increase of cancer has not occurred.

Cancer is, I think, very clearly due to excess of rich food and certain toxins.

The two most potent factors appear to me to be animal flesh and the strong infusion of coffee or tea, taken together. That is, wherever much flesh or other rich proteid food and much tea or coffee are eaten, in that community there will be much cancer. All the highest cancer districts seem to have this condition, but in Holland a great excess of tobacco and coffee is added to a medium consumption of flesh, and in several countries heavy beer-drinking seems to bring a very high rate of mortality. It is these communities which are also largely subject to nervous disorders, and which send their yearly contingents to drink reducing waters at health resorts. Some women who have little exercise, and are moderate in their use of meat and tea, seem to be as subject to cancer as men who are immoderate. There are, no doubt, many persons living temperately who easily become subject to cancer, especially among the more refined classes. There seems to be an inheritance of this predisposition from ancestors, as there is inheritance of a gouty tendency from ancestors who were too fond of wine. Excess in the use of animal food and

of tea or coffee seems to produce cumulative effects in the course of generations, and then the products of worry or indigestion enable the degenerative process to take place. But for the immense majority, cancer is preventable by hygienic living. The power of man for the health of the race is almost unlimited.

It will be observed from the last table that there is at least one exception to the rule that large flesh-eating nations are afflicted with much cancer. I believe a good many exceptions could be found among savages. But there appears to be no exception to the rule that the large tea- and, especially, coffee-drinkers suffer in great numbers from cancer. Tea is used weak in some countries, as in China, and when drunk in small quantity, after a few seconds or one or two minutes' infusion, does little harm. The worst results are found where the population eats much nutritious food, especially of the albuminous kind, beyond physiological requirements, and adds large quantities of sugary or malted liquids, like beer, and toxic liquids like tea or coffee.

Some effects of beer-drinking are not generally known, but they are certainly serious, and I find a statement by a medical man which may have a bearing on the connection between excess in beer and cancer.

"It is more than five years since, in an article of mine, I drew attention to the condition of heart often found in those who drank the so-called honest ale of England to excess." Most of the beer drunk by labouring men is "vilely bad." Labourers are taught from infancy to look upon beer as a necessity of life. The hops contained in English beer are a narcotic, and "combined with alcohol give rise to nervousness

and many distressing troubles that point to a weak and fatty heart."

The "beer heart," or alcoholic-hop heart, has been found common in the United States since the increased use of Munich beer. The same report comes from English doctors, who declare that since Munich beer was imported into England the beer heart has made dreadful ravages. This beer contains hydrate of carbon, which appears to be a decidedly harmful ingredient.[19] Dr. Stables does not add, what seems exceedingly likely, that the unequalled prevalence of cancer in Bavaria may be largely due to the beer which is consumed there in unequalled quantities from childhood on. Beer, tea, and coffee all affect the heart.

A correspondent of the *Vegetarian Messenger* describes the diet of the farmers, among whom cancer was common, in an English county. "Their great delight was pork, as ham, bacon, tripe, trotters, roast and boiled." "Both parents and nearly all my relatives died of cancer, and they all lived in the same way, with wine or beer in addition." No doubt strong tea was added to this rich fare.[20]

"All people," said Sydney Smith, "above the condition of labourers are ruined by excess of stimulus and nourishment, clergy included. I never yet saw any gentleman who ate and drank as little as was reasonable." (1814.)

In 1828 he wrote: "I not only was never better, but never half so well; indeed, I find I have been very ill all my life without knowing it. Let me state some of the goods arising from abstaining from all fermented liquors. First, sweet sleep, . . . no terrors, black

visions of life, . . . I am in . . . extravagant spirits."

In 1836 : " I have had no gout. . . . By eating little, and drinking only water, I keep body and mind in a serene state. . . . I find that all my miseries of body and mind" (in the past) " have proceeded from indigestion. Young people should be thoroughly taught the moral, intellectual, and physical evils of indigestion." . . .

" I am convinced digestion is the great secret of life ; and that character, talents, virtues, and qualities are powerfully affected by beef, mutton, pie-crust, and rich soups."

He declared that he was always in high spirits when he drank no wine.[21]

That great investigator, Dr. William Farr, in dealing with the mortality of occupations, wrote, twenty years ago, in relation to the high death-rate of butchers : " This useful body of men amounted to 49,403, and they experienced a much heavier mortality than any other class except the preceding (innkeepers and beer-shop-keepers) at the ages under sixty-five." At thirty-five the butchers' death-rate was extremely high. " The extraordinary mortality of butchers appears to have escaped observation. . . . The red-injected face of the butcher is an indication of a frail habit of body." Dr. Farr then asks, without answering the question, To what can this excessive mortality be due ?

The baker had also a high mortality, though less than the butcher's, but from causes easily understood, —the long hours at night and the heated, close air in which he worked.

Butchers, as a class, have one of the highest rates

for cancer. It is now well understood that both innkeepers and butchers are the victims of habits of excess in stimulant food and drink, producing toxic effects on the body.

The consumption of tea and coffee per head in the United Kingdom for a century or two back is given as follows by Mulhall :—

Tea in ounces per head—

1711 = ½ oz.	1790 = 24 oz.	1850 = 29 oz.
1725 = 1	1800 = 21	1860 = 43
1740 = 3	1810 = 17	1870 = 61
1750 = 6	1820 = 18	1881 = 73
1760 = 9	1830 = 20	1888 = 80
1770 = 14	1840 = 20	1900 = about 104
1780 = 9		

Coffee—

1801 = 1 oz.	1851 = 18 oz.
1811 = 5	1861 = 21
1821 = 5	1871 = 15
1831 = 14	1881 = 14
1841 = 16	1888 = 13

In the last Official Report of Revenue and Expenditure presented to the House of Commons, dealing with the year 1903-4, I find that the revenue from tea, adjusted to give the true contribution, was, for England, £5,178,000 ; for Scotland, £710,000 ; and for Ireland, £672,000. These are very large figures, especially for a poor population such as that of Ireland.

In fact, a striking feature of recent years is the very large waste of the substance of the poorest class on tea, besides the vast tribute to imperial alcohol.

The revenue from tobacco was, for England,

£10,024,000; for Scotland, £1,331,000; and for Ireland, £1,272,000.

The revenue from beer was £11,553,000, £529,000, and £945,000 respectively, showing a very large consumption of beer in Ireland, in addition to whisky.

In the consumption of spirits Scotland was exceedingly high, yielding £3,757,000.

In the Memoranda of the Board of Trade just published,[22] it appears that on an average of all classes of workmen and their families, about 22s. are spent weekly on food; in this outlay flesh is the heaviest item, 4s. 5½d., besides 11¾d. for fish, 11½d. for bacon, 1s. for eggs, 6½d. for cheese, all highly albuminous foods; 1s. 1½d. is spent on tea,—that is, over half a pound a week, a very large allowance. Half a pound is really ample for one person for six months, if the tea is made in a cup twice a day, infused from one to two minutes It is clear that the ordinary tea of the workman's family is both strong and long infused, and capable of wrecking many constitutions even in early life.

The workman with less than 25s. a week spends 3s. 8¼d. on flesh, bacon, and fish, only 4½d. on rice, tapioca, and oatmeal; 9¼d. on tea, nearly half a pound; 2d. on coffee and cocoa. Total expenditure on food, 14s. 4¾d.

The 30s. wage-earner spends at least 7s. on flesh, bacon, fish, and eggs, and consumes with his family over half a pound of tea.

The 40s. man spends 9s. 10½d. on flesh, bacon, eggs, and fish, only 4s. 3¾d. on bread and flour; he buys nearly seven-tenths of a pound of tea.[22]

In London the expenditure on flesh and fish is even

above the high figures given for the average of the whole population.

Among other items I find that ¾ lb. of cheese is eaten by the average family, 14 to 20 lb. of potatoes; of rice, tapioca, and oatmeal about 2 lb. in England and 4 lb. in Scotland; of tea a little under ½ lb., but in families with over 25s. about ⅔ lb.; of sugar 5·3 lb. is the average, a very large quantity.

In the towns of Scotland, families with over 25s. actually use about $\frac{7}{10}$ lb. of tea a week, and of coffee and cocoa about 0·19 lb. In Ireland the same class uses 0·84 lb. of tea, worth 1s. 7¼d; and the class with the lowest wages tabulated spends 9¾d. on tea, equal to 0·17 lb.

The consumption of tea is greatest in Ireland, 0·73 per family; next comes London, with 0·67 lb.

Labourers' families thus spend in a fortnight what is economically quite sufficient for ten weeks, and very many use this large quantity in destructive strength, altogether unlike the light beverage of the Chinese and Japanese.

In Ireland a large amount of meat per family is consumed in the form of bacon (much of it imported), 1·4 lb. weekly in the poorer, and nearly 2·2 lb. in the better-off families.

In the diagrams for the United Kingdom, it appears that the chief expenditure of all classes is on flesh and fish; the next on butter, milk, cheese, and eggs; and thirdly, far down, comes the staff of life, most of it poor in quality, ill-baked, heavy with water.

In the official accounts of labourers' food, above quoted, I think the expenditure and wages are much above what is actually earned in many parts. In fact,

I have evidence, also from official sources, showing that the labourer in Ireland often earns no more than 10s., and in England 13s., so that the fare of these people, allowing for gardens, would, if counted in, somewhat reduce the average given.

In the evidence before the Committee on Physical Deterioration, Sir Lambert Ormsby, M.D., stated that "all the Irish are very fond of tea," that they "stew it on their hobs before the fire"; that smoking tobacco has very much increased within the last twenty years; that cigarette-smoking by the young assists degeneration; that the poorer class in Dublin drink an enormous quantity of porter; and that from some reason there is a very serious increase of lunacy.

Dr. Arthur Shadwell stated that when women out-patients have told him they drink tea in great moderation, he has found it often comes to about twelve cups a day of Indian tea, exceedingly black and strong. Indigestion and constipation result, which they try to cure by pills.

Dr. Haig gave his opinion that tea means uric acid, that there are 175 grains of theine in a pound of tea; that caffeine is also practically uric acid, and other alkaloids are the same in effect. Beer has about a grain to a pint,—that is, about the same as two large cups of tea.

Mr. Greenwood stated that children are ignorantly taught to drink tea from infancy. It is the habit to give the baby everything to eat which is on the father's plate. "The number of deformed people in Sheffield is something terrible." The diet of a child that could not yet walk was found to be bread and butter and tea. Milk is generally deficient.

Dr. Niven gave his opinion that proper feeding of school children and others is absolutely vital to the future of physical improvement.

Much other evidence of great interest concerning bad feeding, and the abuse of alcohol and tea, will be found in the Report, especially in the replies of distinguished physicians.

Dr. J. T. Macnamara asserted in a recent article that "about 20 per cent. of the working-class children [in London] are in the most hopeless condition with regard to food, housing, and clothing. . . . Very many children are underfed. A breakfast of tea-kettle broth [bread infusion], a bit of bread and margarine, a bit of bread and treacle, and some abominably poor tea—these form the *three meals* daily." [23]

These children are being ill prepared for life, both by the deprivation of nourishment and by the continuous administration of a poisonous drug in the place of food.

In an inaugural address to the Sanitary Institute of Great Britain, Sir Douglas Galton said that the Rev. Mr. Lintott, who managed the Northern Counties Orphan Institution, informed him that the children there had been singularly free from children's disorders during the eighteen years of the institution's existence. Each child had a pint of new milk daily. During three months a trial was made of weak tea and one pint of milk; the number of children who were unwell rose beyond what it had been for years, and immediately fell again when the milk was restored.[24]

These are the conditions—poor, ill-nourishing, inappropriate, and stimulant or toxic food—which prepare the constitutions of our young people in town and

country for the development of malignant disease or unstable nerves and inefficient digestive capacity.

When they have grown up their food increases in richness, but is still inappropriate—too much flesh, and too little wholesome grain and fruit, too much beer and tea, too little purifying water as nature supplies it from her springs for the benefit of man.

The towns have been the great consumers of flesh and stimulants, yet the towns have produced the great majority of inefficients and degenerates.

In an article written in May 1903,[25] Mr. Shee showed that British physique is going down, that the proportion of men under the minimum standard for the army was, in 1845, 105, in 1900, 565 per 1000; that 77 per cent. of the population is now urban, against 36 in Germany, and 25 in France; that in Berlin only 38 per cent. of intending recruits are fit for service; in agricultural East Prussia, 80 per cent.

But the purely rural counties of the United Kingdom have rapidly acquired dangerous habits of perverted alimentation, which will soon bring them among the degenerate folk of the nation.

The Official Report on cancer in Ireland shows a prevalence of cancer both among the highly nourished and among the poor women who starve on bread and tea. Excessive nutriment is certainly not necessary for the genesis of cancer.

The increase of cancer, like the increase of insanity, depends to a very considerable extent on wrong food and drink, whether rich and stimulant, or poor and stimulant. In Ireland, the inspectors reported that the increase of lunacy in the year was 104 above the ten-year average, and that was already large. In Carlow

County, the leading causes assigned were the excessive use of alcohol and tobacco; in Omagh, alcohol and ether.[26]

The Commissioners in Lunacy, in their last Report, state that "the average annual increase [in the United Kingdom] in the ten years ending 31st December 1903 was 2513. The increase in 1903 exceeded the average annual increase in the preceding ten years by 821."

About 150,000 persons were discharged in ten years from the asylums, to mix in the general community.

The increase in Ireland has been attributed to the less capable and older people being left behind by the emigrant tide. I cannot consider this a chief cause, for I find that at places like Chicago, where the young and strong have settled, the increase of insanity and of cancer is most alarmingly rapid. And there food is abundant and stimulant.

In each division of the kingdom insanity, statistically viewed, has nearly trebled since 1862; or we may say that, roughly, the percentage has doubled in proportion to population. Yet this has been the period of an unexampled abundance of money, luxury, rich food, and stimulating drinks and comforting narcotics.

The rapid growth of cancer belongs to the same period.

Similarly, appendicitis has become quite common, especially, perhaps, among the rich, who have three "good meals," and extras at short intervals. M. Lucas Championnière is reported as having said, at a discussion in the French Academy of Medicine, that

every day more confirmation was forthcoming of the idea that it was the abuse of a meat diet which was the principal cause of appendicitis. In countries like Brittany, where little meat was eaten, appendicitis is very rare.[27]

Mr. Joseph Kidd attributes the disease chiefly to hurried meals, imperfectly chewed and digested, and aperients.[28]

Gout, a gouty state, and some kinds of rheumatism, are well known to follow a diet habitually rich. An excessive consumption of meat, says Dr. Arthur C. Luff, is a potent factor in the production of a gouty state, but some cases of gout improve on an exclusive diet of red meat and hot water. "In the case of a gouty person a spare and plain diet is required," and generally plenty of water and no alcohol.[29]

Lucian, addressing the gout, declared: "Thou fleest from the threshold of poverty, and art delighted in coming to the feet of wealth."

And a physician, writing in 1903: "We are living on false stimulants, . . . we are learning, and even nationalising, bad hygienic habits. . . . It all ends in nerve-storms and new nervous diseases, and outlets of morbid methods on the part of outraged nature. . . . I am writing as an observing physician, who cannot reconcile England's continued greatness with the growing luxury practised by her sons."[30]

I have already quoted Nansen on the destructive effects of coffee and brandy on the Eskimo. The following additional testimony of the effects of tea and coffee on his own party in Greenland is interesting. After having tried the coffee extract two or three times in the afternoon and evening, and found that, though

it cheered them up for a time, they got little or no sleep at night, they first restricted themselves to a morning cup, and then tabooed it altogether. Tea as a weak infusion seemed to do less harm.

Nansen came to the decided opinion that stimulants and narcotics—tea, coffee, tobacco, and alcohol—were best left alone. We "can get nothing in this life without paying for it in one way or another." "Though tobacco is less destructive than alcohol, still, whether it is smoked or chewed, it has an extremely harmful effect upon men who are engaged in severe physical exertion," badly affecting digestion, strength, nervous power, endurance, and tenacity of purpose.[31]

Nansen is a first-rate observer, and there can be no doubt of his facts in this matter. The recently acquired habits of continual use of tobacco, tea, etc., go a very long way to explain the physical and mental defects of our time, and the growing deficiency of great men. And the weakened digestion and nerve power, with the continual internal irritation of excessive uric acid and other toxic products of improper or excessive food, must be accountable for a very great deal of the increase of liability to cancer.

Probably the high mortality from cancer in Scandinavia is largely due to the extraordinary amount of coffee consumed, in addition to the increase of other articles of diet, such as flesh and sugar. I find in a recent official account of Sweden,[32] published by order of the Government, that "the use of coffee has very greatly increased, especially of late years, and our population must now be one of those most addicted to coffee-drinking." In North Sweden this is often carried to excess, especially by women. "The consumption

of sugar has increased enormously." The consumption of flesh—28 kilog.—is about the European average, but there is in addition a very large consumption of fish and cheese among certain classes.

The following table shows the increases per head in several articles :—

	Coffee (hectograms).	Sugar.	Tobacco.	Beer.
1861-70 .	17·3	4·87	7·13	11
1871-80 .	23·3	7·63	9·76	16·8
1881-90 .	30·4	10·57	9·72	21·8
1891-95 .	34·5	16·08	10·53	27·6
1896-1900	48·1	18·48	11·27	33·4

These figures strike me as very remarkable, and of great significance in relation to disease.

In Davidson's *Pathological Dictionary* it is stated that cancer is very prevalent in Norway; in the district of Hamar the rate was about 10·6 in 1886; that in Germany it is excessively fatal in Schleswig, Stralsund, and Lüneburg,—least in the eastern districts of Marienwerder, Bromberg, Posen, and Oppeln. Lüneburg is near Hamburg, Schleswig is north of Holstein (Danish race), and Stralsund on the North Sea, about one hundred miles north of Berlin. I have no special information as to the diet in these places. The other districts named, where cancer was low, are far east of Berlin, and in these parts the fare is generally comparatively poor.

Davidson observes that cancer is much more fatal in North than in South Italy. The diet in the former is richer, and includes more stimulants and flesh.

In the New Zealand Official Year-Book it appears that "cancer has grown very rapidly from 2·69 in

1881 to 6·09 in 1899." Though the rate is not equal to that of England or France, its rapid increase makes it "most alarming." We must remember that New Zealand is a healthy country, with plenty of space, no horrible conditions of overcrowding, and a population where the young are numerous. The stomach is the organ most attacked in males, and, to about the same extent, the mouth, lips, tongue, and throat together. Next in frequency come the liver, intestines, and rectum. Females are much less attacked in parts about the mouth,—only 6 to every 31 males.

I could see no reason for the prevalence of cancer among the backwoodsmen of North America, as mentioned by Dr. Wolff. "The disease," he says, "is extremely prevalent in the timber districts of the United States and Norway, as well as the wooded parts of Switzerland." (*Nineteenth Century and After.*) The other day, however, I happened to read, in a lively account of the backwoods of Canada,[33] by Mr. Arthur P. Silver, that the lumbermen maintain their remarkable powers on buckwheat cakes, served with molasses, potato pies, baked beans, white bread, pork, and bacon; so far good, but that "tea, *black as ink*, sweetened with molasses of sugar-house syrup, is always near the fire by day and by night, and is used in *vast quantities.*" Here we have the rich nutriment and the great excess of stewed tea and the excess of sugar, corresponding to the excessive beer and excessive coffee of parts of Holland, Scandinavia, Switzerland, Baden, and Bavaria, in all of which cancer is exceedingly prevalent. Dr. Wolff seems to attribute some influence to the forests, but we have to consider the habits of the people. Ticino, in Switzerland, he says,

is deforested, and Dalmatia has no forest, and in both these districts the rate is low.

Dr. Wolff observes that the death-rate from cancer among domestic servants in the United States between forty-five and sixty-five is double, and above sixty-five, three times the average. These, too, probably consume large quantities of tea and coffee, and have many irregular meals.

The backwoodsmen and the domestic servants lead a very different kind of life. But they are alike in eating and drinking largely of nutritious and stimulant substances, and the effect on the servants of a smaller quantity may be equal to the effect of the larger quantity on those whose toil is more severe.

The chief conditions for enabling cancer to start in all cases seem to be over-nutrition or over-toxication.

Sir William Banks, in the course of an exhaustive series of lectures before the Medical Society of London (see *Lancet*, 10th March 1900), said that the most numerous victims of cancer were "well-nourished persons, with plenty of beef and fat about them, and often with a fine healthy colour in their cheeks. . . . The better the nutrition the more deadly and rapidly growing is the cancer. . . . The increased wages and emoluments of all classes in this country have enabled freely to purchase of the best there is to be had. . . . Our better classes eat infinitely too much, especially of animal food, partaken of at breakfast, lunch, and dinner." Over forty-five, "excess in food is perhaps worse than excess in drink." Too much nourishing food produces a widely spread secondary kind of gout; "I think distinctly that it has also to do with the production of the cancerous diathesis." Amongst the highest

mortality rates are those for coachmen, commercial travellers, grooms, merchant seamen, maltsters, brewers, innkeepers, butchers, and plumbers.

On examining the Report of the London County Council, a most elaborate volume, I find that in 1902 the following districts had per 100,000 a maximum rate for cancer :—City, 74 ; Westminster, Marylebone, and Hackney, each 51 ; then Stoke Newington, Holborn, and Shoreditch somewhat less. Those with the lowest rate were—Bethnal Green, 18; Southwark, 20; Hampstead, 29 ; then Fulham, Bermondsey, and Poplar.

For carcinoma the highest rates were—City, 70 ; Hampstead, 69 ; Bethnal Green, 58 ; Bermondsey, 55 ; Southwark, 58 ; Lewisham, 59 ; St. Pancras, 56 ; Paddington, 50 ; Marylebone, 53. The lowest rates were—Hackney, 32 ; Stoke Newington, 35 ; Hammersmith, 39 ; Woolwich, 40 ; Kensington, 41.

There is no clear preponderance of incidence on the rich, but it is remarkable that the City is highest in each list, and Westminster next in cancer alone. Hampstead, a healthy place, is higher than Bethnal Green in the two forms taken together, and Marylebone higher than Southwark. Probably a similar examination forty years ago would have shown a more decisive majority of cases for the rich quarters. The amount of flesh and tea consumed by rich and industrial districts is now more nearly equal.

In sarcoma, of which the cases were much less numerous, the City, Hampstead, and Lambeth were highest, and Fulham, Stoke Newington, Woolwich, and Finsbury lowest.

The excess of cancer over the average of the previous ten years in London was 608.

If we turn to the Report of the Committee of the Statistical Society, read in November 1903, we may note that the yearly consumption of butcher's meat in the United Kingdom was—for the upper classes, 5·77 lb.; for the middle, 3·5; for the lower middle, 2·35; for artisans, mechanics, and labourers, 2·06. Artisans and labourers consumed 107 lb. per annum, farm labourers only 55. There would be rather less difference in the consumption of tea per family in a comparison of town artisans and country labourers.

Cancer and gout appear to be less common in workhouses and institutions where diet is regulated than in the home. Professor Clifford Allbutt stated in the *Lancet* (1902 or 1903) that old people have often very calcareous blood-vessels, but reach a very great age. After forty a man should carefully control his appetite; "most men eat and drink far more than they need for the day's work. Rigorous restriction for the remainder of life is required as soon as high blood-pressure becomes manifest; if treated early, such cases are commonly curable."

In the just issued official "Correspondence relating to Cancer Research, 1905," in connection with the Cancer Research Fund, I find these particulars:—

Gibraltar.—Dr. William Turner, surgeon, Colonial Hospital, reports: The number of persons above thirty-five in Gibraltar is 8363; the deaths in 1903 were 5. In males, the lips and tongue are most affected; in females, the uterus and breast. Predisposing causes appear to be tobacco-smoking in males and premature child-bearing in females. "The Spaniard's cigarette or cigar is never absent from his lips if he can help it," and he allows them to burn close to his lips.

Zomba, Central Africa.—Natives much less liable apparently than Western Europeans.

St. Helena.—Three or four yearly out of 3000 or 4000.

Falkland Isles.—No deaths for many years.

East Africa Protectorate. — *Nairobi* — Rare. *Uganda*—Not rare. *Mombasa*—None in eight years. —(Dr. Macdonald.) *Lamu*—None seen. *Kisumu*—One seen in two and a half years.—(Dr. Wiggins.) Very rare.—Dr. Mann. *Mombasa*—None seen.—(Dr. Johnson.) *Kismayu*—One seen.

Jubaland.—In two years no case seen, except some doubtful.

Mauritius.—Much rarer than in England. Twenty out of 1777 deaths.

Barbadoes. — One in 35 of total deaths. [*Common.*]

Transvaal. — In the hospitals named by Lord Milner, of 5763 Europeans treated 43 were cancerous, of 3815 natives 10 were cancerous.

Castries, Windward Islands.—Apparently rather common.

St. Lucia.—Rather rare.

Vieux Fort.—Rare.

Ceylon.—About one death in 460 deaths is from cancer.

Ratio—Sinhalese	. . .	1 in 15,855
Tamils and Malabars	.	1 in 13,996
Moors	. . .	1 in 76,011
Burghers	. . .	1 in 7,827
Malays	. . .	1 in 5,951
Europeans	. . .	1 in 6,300

Relationship in provinces—

Western .	1 in 9,590	Eastern .	1 in 86,801
Central .	1 in 19,776	N.-Western .	1 in 70,725
Northern .	1 in 10,027	Uva . .	1 in 10,370
Southern .	1 in 2,024	Subaragamuwa	1 in 35,760

It appears that cancer is more than forty times as common in the Southern as in the Eastern Provinces, and more than thirty times as common as in the North-Western Province.

In Ceylon altogether 1 in 16,820 persons in 1903 died of cancer; 1 in 4422 cases of diseases in hospitals was cancer.

It is associated usually with the parts about the mouth. "This may be due to chewing betel" (tobacco, betel leaves, areca nut, and slaked lime). They also eat curry flavoured with hot chillies.

The people of the Northern Province are great betel-chewers, and men and women smoke very strong tobacco, smoking cigars to the burning end.—(Dr. Perry.)

Fiji.—Rather rare.

In *Degama.*—None.

Southern Nigeria.—Rare. One case at *Ifon*: woman who lived on yam dough, with strong cayenne and oklas sauce.

Gold Coast.—Very rare. In colony proper, two cases; all over the protectorate none found in ten years, nor in Ashanti and northern territories.

Queensland.—In ten years no case seen among aboriginals.

Lagos, 1 in 14,090 persons: very rare in *West Africa*; not common in *West Indies.* Twenty-two

cases in 310,000 natives, or *less.* *Very rare* among natives far from Europeans.

In every case which I have been able to investigate, I find that the increase of cancer in a country has been preceded by an increase in the amount of flesh, and of tea or coffee consumed, and often of beer and tobacco also. Thus, in Austria, the consumption of flesh and tobacco has increased, and of beer (according to a note in the *Society of Arts Journal*, Oct. 23, 1903) from 133,000,000 gallons in 1855 to 337,000,000 in 1873, and 556,000,000 in 1902. There are cases of flesh-eating nations having a low rate, but there is no case of a low rate among people using the other articles largely.

I do not think an exception can be found, at any rate, to the rule of increase with increased use of tea or coffee.

Moreover, wherever I have known that the rate of cancer was high, I have expected to find a large consumption of coffee, tea, or beer, in addition to animal food, and the expectation has been fulfilled. On the other hand, where I have known that the consumption of these articles was large or small, I have expected and found a large or small cancer mortality. This verification of prediction based on contributed experience is a good test of the correctness of a theory.

The same principle of prediction and verification has been applied to classes and communities within a country, with almost the same correspondence of results.

The conclusions arrived at may be set forth particularly as follows :—

1. Every country where flesh, or animal products

rich in proteid, such as cheese, are very largely used in conjunction with tea, coffee, or narcotics, is subject to a large amount of cancer.

2. Every country not using flesh meat, tea, coffee, beer, etc., habitually has little cancer or none.

3. Of any country, any part which uses much less flesh, and tea or coffee, than other parts has a much lower rate of cancer.

4. Of any country, every part which uses a maximum amount of flesh, and of tea or coffee, has a very high rate of cancer.

5. The increase of cancer in every European and American community has followed an increase of the consumption of flesh, and especially of tea or coffee, and in many cases of beer also.

6. In every colony or native state, any negro or native race adopting European diet becomes subject to a great increase of cancer.

7. There is no instance, apparently, of a life-abstinent community formed out of, and residing within, a non-abstinent community, not having a much lower rate of cancer than those outside it.

8. The amount of rich and proteid food, and the amount of theine, caffeine, alcoholic, uric acid-forming, and other poisonous matter, consumed by the middle-aged man or woman of to-day in modern States is very much larger than the amount required or disposable by the body; in many cases the *daily* amount of albuminous food is four to six times the physiologically appropriate maximum, and of sugary alcohol, tea, coffee, etc., ten to twenty times what a dose would be if used as a medicinal drug, or what has been customary in Eastern lands, where experience has been longer.

9. The observations of physicians show that cancer is most common among highly nourished, robust-looking persons. Women living on bread and much tea, and subject to worry, are also predisposed.

10. Cancer is most common, *cæteris paribus*, in those occupations involving exposure to certain irritating materials, both without and within the body.

11. Cancer is most apt to attack constitutions affected by rheumatism or heart weakness. Coffee, tea, beer, and tobacco in excess all produce rheumatism and heart weakness.

12. A light diet is best in cancer cases; this tends to show, as the alleviations of many diseases do, the means of prevention as well as of mitigation.

13. Statistics* give evidence that the following diseases, besides cancer and rheumatism, have increased in England since 1850–54:—Diseases of heart, brain, kidneys, and liver.

Note.—Some unwelcome repetition in the above chapter may deserve reproof, but I was anxious to give the statements of different authorities as distinctly as possible in a matter of this gravity.

Further observations on cancer and other diseases of civilisation will be found in the Supplementary Chapter.

* *Studies in Statistics.* Longstaff.

CHAPTER XII

Diet in Relation to Athletics and Training

The general principles of training and of attaining muscular strength are well known and described in many excellent handbooks. A rather monotonous diet, largely of flesh, was formerly recommended, but certain rules for attaining high efficiency, with or without flesh, wine, or beer, are now established. In fact, the most recent evidence, both of the scientific physiological value of various foods and of the actual performances of competitors, seems to incline the balance on the side of abstinence from both alcohol and flesh.

The athletic feats performed by vegetarians are so remarkable that they appear to prove, by themselves alone, a very decided increase of physical power, by the mere substitution of several kinds of nutriment from plants for the animal products which are so much relied on in the greater part of Europe and North America.

The result seems to be owing, first, to the elimination from the body of matter contained in animal flesh, which has the qualities of a continual poisonous or irritating ingredient foreign to the healthy constitution; and secondly, to the actual fitness and strengthening qualities of the plant products for the human body.

This explanation is confirmed by the common experience of hard workers who adopt a well-chosen vegetarian diet, of an increase of health, strength, and enjoyment, indicating appropriateness of the ingesta to their constitution for the full development of energy.

The success of vegetarians in the field of athletics is the more remarkable for this reason, that several of the winners were, before their change of diet, either ill or far from strong, and would not even have been considered "in the running" if they had lived in the ordinary way.

And if we estimate the proportion of possible competitors from the vegetarians of England or of Germany, we shall find it very small indeed compared with the possible competitors from the multitude of well-trained and well-fed carnivors. Probably there are not more than ten or twelve vegetarians to a thousand flesh-eaters of the class who go in for athletics. Yet we have this astonishing result, that in several contests—in walking, in cycling, in tennis or racquets—the vegetarians have easily won, or have beaten all previous records. And where there has been a certain lot of vegetarians and another lot of flesh-eaters, it has happened, at least once, that the first five in a race have been vegetarians and nearly all the last flesh-eaters.

The instances now given are only the most prominent examples which have been published in the last few years.

In 1893 a seven-days' walking race from Berlin to Vienna, 372 miles, was easily won by Herr Elsasser (first) and Herr Pietz (second), who beat the fastest flesh-eater by no less than twenty-two hours.

The great Whitsuntide walking race of 1902, from Dresden to Berlin, 124½ miles, was attended by eminent scientists and medical men. Karl Mann, as a fruitarian, and J. Boege, as a mixed feeder, were put on exact dietary for eleven days before the race. Mann's diet was biscuit, bread, marmalade, one sort of fruit juice, Quaker oats, nut butter, and bromose, and measured pure water. The first six men to arrive were vegetarians, of the "natural" food system, eating little cooked food, but nut preparations to a large extent. Mann excluded, from January onwards, not only flesh, fowl, fish, alcohol, tea, coffee, cocoa, and stimulants, but eggs, milk, cheese, butter, and pulse. Nut butter he ate daily 4 oz., and fruit juice called weinmost. He had two meals daily.

There were thirty-two competitors. The first six, the ninth, tenth, eleventh, and twelfth to arrive were vegetarians. The seventh, eighth, and thirteenth were flesh-eaters. Mann's time for the 124½ miles was 26 hrs. 58 mins.; the time of the seventh was 34 hrs. 32 mins. Mann was found by the committee after the race to be in excellent condition, and was kept very busy for the four days following.[1]

In 1898, Mann, winner of the great seventy-mile walking race, gave an interviewer the following statement (abridged here): "I am twenty-five years old, and in the fifth year of vegetarianism. I have been living on the raw diet for six weeks. I eat much fresh fruit and vegetables. Good milk, too, I find a first-rate food. As for wholemeal bread, I eat very little of it. In my opinion, we men shut up in offices all day require very little nitrogenous food, and what albumen is necessary we can get more easily in other ways. I

take generally three meals a day. You would not think that till after my eighteenth year I was wretchedly weak, with no energy at all. I feel now equal to any amount of physical and mental work, and am conscious of a kind of superfluity of health. My food *during* the race was fresh fruit, mostly strawberries, lettuces plucked from the field in passing, and some bread and milk. This is my first walking match ; I have not trained at all with the exception of several good walks on Sundays. But I do a good deal of dumb-bell and similar exercise. I am a corresponding clerk, and am at the desk nine hours a day." In answer to a question, he stated that it was decided that he had beaten the fifty-six mile record in Germany for road-walking without pacemakers by twenty minutes, although he had slacked down several times, not having any intention of beating records.

Emil Makowski, who came in second, had been a vegetarian over four years, was accustomed to simple fare, with plenty of fresh fruit, at two meals a day. Very little milk as a rule, but during the race two glasses of milk and 1½ lb. of strawberries. Every two or three hours during the race, strawberries and milk.[2]

Mr. Allen's first long walk of a hundred miles since he had become a vegetarian (about three years) was accomplished with an ease which surprised him. Later he performed his " record " walk, Leicester to London, about 100 miles, in 20 hours 22 minutes. Eight weeks before this walk, he " went in thoroughly for the open-air system of living," and subsisted on a very light fare of vegetables, bread, oatmeal, and a little fruit. He finished the race in a remarkably fresh condition, without blisters. Mr. Allen observes that Mr. Olley,

the cyclist, who was only an ordinarily speedy man when he ate flesh, soon became a record breaker after discarding it; that Karl Mann established many records; that Miss Rosa Symonds rode her bicycle ninety-eight miles a day for eighteen and a half consecutive days; and Mr. Eustace Miles attained several racquet and tennis championships, on the non-flesh dietary.[3] [In the summer of 1902 Mr. Miles, for the fourth time in succession, obtained the Amateur Tennis Championship of England, beating his challenger by 6–2, 6–0, 6–2, in three sets. In the walking race won by Karl Mann the German Government sent medical representatives to be in constant attendance on the competitors before, during, and after the race, with a view to obtaining accurate information. Nothing of the kind is done by the British Government.]

In 1902 Mr. Allen said that he gave up athletic exercises some time ago, but, being twitted with not doing athletic performances since he became a vegetarian, he set himself to walk a hundred miles. Previously his farthest walk without a rest had been fifty miles. Though he had no time to train properly, he now walked a hundred miles without inconvenience. Up to sixteen he had been extremely weak and sickly. He determined to alter his mode of living, having heard the doctor say he could never get strong. He then gave up alcohol. Vegetarian diet led to a healthier and better life.[4]

A very remarkable walking performance was accomplished last September.[5] On 29th August 1904, at 5 a.m., Mr. Allen started from Land's End Hotel, and at 2.33 a.m. on 17th September entered the hotel at John o' Groats, having completed 908½ miles in 16

days 21 hours 33 minutes. He did not walk on the two Sundays. His average mileage was 53 a day; in the first week he did 45½ a day, in the second week 53. On Monday, 12th, he walked from Glasgow to Perth, 60½ miles, on Tuesday 56½ miles. In the last five days the enormous average of 63 a day was attained, and in the last two days 140 miles were covered. He finished in splendid physical condition.

The best previous record was actually beaten by seven days!

Mr. H. Light maintains that there is no cycling club in the United Kingdom, having only the numerical racing strength of the Vegetarian Cycling Club, which can even come near its brilliant results.

Geo. A. Olley, at eighteen, had gained thirty-two prizes. He raced at but one of the fourteen meetings without success. He out-sprinted the sprinters at such a distance as the one mile championship of the Southern Counties Union—a most remarkable feat for a man holding the twenty-four hours' record.

In 1899 E. P. Walker won the one hundred miles championship and £25 challenge shield of the Yorkshire Road Club. He won twenty prizes, and made records in several races. He is a life vegetarian.

Kurt Pfleiderer and Eric Newman, both life vegetarians, fourteen and fifteen years old, completed —the former a paced 100 miles on the London–Bath road, in rather unfavourable weather, in 6 hrs. 17½ min.; and the latter an unpaced 100 miles on Gloucestershire roads in 6 hrs. 40 min.

J. E. Newman, life vegetarian, at first attempt, 175¼ miles unpaced in 12 hrs.

T. H. Schultess Young, 100 miles, Bath road, in 5 hrs. 23 min., 1898. The last 60 miles against continuous wind and rain.

And there are many other similar performances.

Charles Miller, the world's long-distance cycling champion, has for several years past proved himself invincible (1899); he never touches flesh food immediately before and during races. His trainer is a vegetarian.

Eustace Miles, in 1899 amateur tennis and amateur racquet champion, tennis gold medallist 1897-98-99, holds the amateur tennis championship of America, and amateur racquet championship of Canada. Is classical honours coach at Cambridge University.[6]

Records of Notable Performances.—Bicycle.—The en-route "flying start" mile was covered in 1 min. 25⅘ secs. (record) by G. A. Olley, 1903.

The one-hour record, 25 to 35 miles.

In 1900 the world's record for one mile amateur unpaced, 2 min. 7⅘ secs. (So far as is known, only one British amateur has surpassed this.)

London to Brighton and back, tricycle, paced, J. Parsley, 1898, 6 hrs. 18 min. 28 secs. (R.R.A. record).

Bicycle.—100 miles, S.R.R.A. course, G. A. Olley, 1901, 5 hrs. 44 min. 7⅕ secs.; best time by a licensed amateur over this course. *Bicycle*, twenty-four hours, on *western* roads, 317¾ miles.

Amateur tennis championship, Eustace Miles, 1903 —fifth time.

Miss M. A. Scott (vegetarian while training, occasionally eats fish when not training), ladies' amateur swimming championship and record for 100 yards, in 85⅕ secs., and 66 yards in 55 secs.

Walking. — W. de Creux Hutchison, Dover to London, 72 miles, 14 hrs. 19 min. 40 secs.

H. E. Bryning, in 1899, beat all Indian records, 1 to 24 miles.[7]

Mr. Olley rode from London to Edinburgh, on October 21-22, in 52 min. less than the record time, in spite of a fall from sideslip, by which his arm was sprained and his hand cut. The roads were bad for a great part of the way, and the wind was contrary. 344½ miles were covered in twenty-four hours. The start was made from London General Post Office at 2 p.m., on 21st October; the finish at Edinburgh at 5.11 p.m. on 22nd October—382 miles in 27 hrs. 11 min.[8]

Mr. J. Miller of Larkhall, an enthusiastic vegetarian, walked in October from Carlisle to Glasgow—95 miles—in twenty-two hours. He carried his food with him—raisins, dates, nuts, etc.[8]

On 16th September, J. Parsley and F. Beaver broke and now hold the world's amateur tandem records from 1 to 5 miles.

On 27th June 1896, J. Parsley won the Catford hill-climbing contest, open to all comers.

On 13th August, E. P. Walker finished first in a 10 miles team race between all the road clubs in the Hull district.

C. G. won the 100 miles championship of the Vegetarian C.C. on Catford track in 4 hrs. 30 min. 50 secs., and A. R. Wyatt finished in 4 hrs. 39 min.

J. Barclay won the half-mile Scottish championship in foot races, and won during the year eleven firsts, seven seconds, and five thirds, including distances from 200 yards to 10 miles. His fastest mile was done in 4 min. 24⅖ secs.

The French long distance cycling champion, Huret, rode 545 miles in twenty-four hours in 1896 on the Paris winter track. Rate 22 miles an hour from start to finish. His food during the contest consisted of thirty eggs, three quarts of boiled rice and milk, a quantity of tapioca, chocolate and fruit, wine, and Vichy water.[9]

On 4th April 1904, the outfitters' annual walk took place. The course was London to Brighton—52¼ miles. The winner walked the distance in 9 hrs. 24½ min., doing the last five miles in 51 min. 45 secs. He is a vegetarian. He had little opportunity for systematic training, being employed till 8 p.m. Through a misunderstanding he had to walk his first 25 miles without food.[10]

A cyclist of seventy-eight wrote in the *Lancet* of 23rd August 1900: "I am much interested in advancing the cause of total abstinence from [flesh] meat, alcohol, and tobacco. . . . I have just returned from riding to Edinburgh and back on my tricycle." The time occupied was thirty-one days from London to Edinburgh and back; his weight was 116 lb. both at the start and at the finish.[11]

Dr. Harris, at eighty, rode his tricycle from London to Bath, 106 miles, in one day. Mr. Allen walked from Bedford to Leicester and back, 100 miles, in 22 hrs. 23 min. Mr. J. E. Newman, a life vegetarian, rode 175¼ miles unpaced in 12 hours.[12]

A writer of notes on football says: "The amateur champion of the world at racquets simply refuses to train on any flesh foods. Few understand the body-building basis of plasmon, despite the fact that its praise has been so loudly sung by that sterling all-

round athlete, C. B. Fry. This, combined with cheese, nuts, and grain foods, would form a sound basis of diet, and fruits and salads being added, fatigue would soon become a thing of the past." [13]

A local unpaced record, Bath to London and back, was reduced by three hours in November by Mr. J. Britton, a vegetarian. Two hundred and sixteen miles were done in 14¾ hours, on a first attempt, with heavy roads. The rider appeared none the worse next morning.[14]

The light-weight boxing champion of the United States, Kid Parker, has dispensed with flesh altogether. " Since that time," he writes, " I have been a strict vegetarian, and have been rewarded in more ways than one. I have gained in mental power and increased my physical endurance. The increased clearness of intellect is unmistakable, and I believe I am a better man in every way, physically, mentally, and morally." [14]

Mr. Sampson, the " strongest man," would advise no particular dietary ; he would exclude from the diet of persons inclined to corpulency much of the common starchy and fatty foods, such as potatoes and butter, which may well form the diet of persons inclined to be thin. " Pies and such trash are equally poisonous to every class of person that seeks to acquire strength." " Tobacco in any form is injurious." It weakens the heart's power, and spoils digestion. He strongly deprecates the use of stimulants between meals.[15]

Madrali, a great Turkish wrestler, has no special diet or training. He eats plenty of meat, rice, and bread ; and is a total abstainer, but smokes a little.[16] Hackenschmidt, his antagonist, eats plain meat and plenty of eggs, is fond of sugar, a total abstainer, and

never smokes. Both men say they find English wrestlers weak.[17]

At the annual meeting and contest between the "London Central," the "Shepherd's Bush," and "Vegetarian" Cycling Clubs, the Vegetarian, in the three-mile inter-team race took first and second positions in one heat, first and third in the next, besides securing both half-lap prizes.

A noted cyclist, practically vegetarian for fifteen years, has ridden during sixteen years about 73,600 miles.

The following narrative appears in the ninth edition of the *Encyclopædia Britannica*, article "Dietetics":—

"In addition to diet made in consequence of additional bodily work, not only should the stimulus of animal food be attended to, but the bulk of starch and fat in the rations should be augmented even in larger proportion, for these aliments are the most direct contributors of force.

This is well illustrated by a remarkable feat performed on the Great Western Railway in the summer of 1872. It was necessary to shift the rails from the broad to the narrow gauge on upwards of five hundred miles of permanent way within a fortnight. The task was enormous, for the Great Western is one of the few English lines whose rails are held down by bolts screwed into nuts. All these had to be unscrewed and replaced after removing the heavy rail two feet. About three thousand men were employed, working double time, sometimes from four in the morning till nine at night; and, without one sick or drunk, they accomplished the work within the prescribed time. The scheme for generating muscular power was this:

The men were hutted along the line, so as not to waste their strength by coming and going, and they brought with them bacon, bread, cheese, cocoa, etc., to provide their usual meals at usual times. But they had no beer nor alcohol in any form. A pound and a half of oatmeal and half a pound of sugar were allowed extra to each man daily, and for every gang of twenty-one a cook was provided. Oatmeal was sprinkled with sugar and thoroughly boiled till thin gruel was made. Buckets were filled and carried round when the men called for this drink. They liked it exceedingly."

Mr. Miles gives the following testimony to the power of diet of the appropriate kind, to develop physical energy :—

"Then I tried the simpler of fleshless foods. Before long, away went my headaches, my tiredness after hard exercise, my constipation, and the symptoms of albuminuria. . . . My skill increased, my activity and litheness increased, my food expenses went down. . . . I felt more inclined to work. In fact, since then I have worked incessantly. Above all, I was, and am, as near being happy as ever I expect to be.

"For over four years I have lived almost without flesh ; when I have returned to it, partly as an experiment, and partly owing to exhaustion (for I used every now and then to take too little proteid, through ignorance), back have come *all* my old symptoms. . . . Back comes the liking for alcohol."

The simpler foods are : good bread, peas, lentils, cheese, milk and proteid from milk, nuts, fruit, etc. Mr. Miles advises abstinence from mere luxuries, such as tea and coffee.[18]

CHAPTER XIII

The Prevalence of Adulteration—Importance of Pure Food

The extent to which articles of food and drink are subject to adulteration fails to be generally realised. As a matter of fact, from the infant's bottle of milk to the common fare of the working population, and the dainties of the invalid, there are few supplies coming by the way of trade which are not more or less frequently manipulated or depreciated in value by sophistication.

The following quotations from Official Reports are instructive :—

"*Report of the Departmental Committee on the Use of Preservatives and Colouring Matters in Food. With Evidence of Witnesses.* London : 1901.

"The principal antiseptic agents at present employed are boric or boracic acid and borates (so-called boron preservatives), sulphurous acid and sulphites, fluorides, salicylic acid, benzoic acid or benzoates, and formalin or formaldehyde. The benzoates and fluorides are very little used.

"The boron preservatives are largely used for dairy produce, margarine, ham, bacon, sausages, and preserved meat foods, and less commonly in beverages.

"Salicylic acid is employed chiefly in beverages, wines, beers, ciders, and temperance drinks, and in foods derived from fruit, such as jams and jellies.

"Formalin is used chiefly for milk; it is a very potent and poisonous substance. Even when comparatively dilute it has a remarkable effect upon animal tissue.

"Sulphites are used by brewers, butchers, and poultry and game dealers.

"Of 110 farmers and dairymen who replied to inquiries, 65 admitted the use of preservatives. In at least 13 cases the basis was boric acid, two were formalin, the rest were salt, saltpetre, and other unknown substances.

"It appears that at large butter factories in Ireland, Australia, Canada, France, and other countries it is the practice to add at least half per cent., that is 1 lb. to every 200 lb. Ham and bacon from Canada are largely drugged."

The following table, abbreviated from the Official Report, summarises the chief articles treated with preservatives, and the percentage of cases in which preservative was used in each class of food examined :—

	Per cent.		Per cent.
Milk	18·2	Jam	44·0
Cream	77·9	Lime and lemon juice	88·5
Butter	57·1	Cordials	70·8
Margarine	74·4	Fruit syrups	65·2
Bacon	70·5	Temperance drinks	26·1
Ham	82·7	Imported beers	39·0
Sausages	66·4	Wines and beers	31·2
Potted meats	53·3	Soups	16·3
Pork pies	70·8	Sauces	20·0

One thousand two hundred and forty-seven articles contained boron, 320 salicylic, 20 formalin, and 143 sulphites, out of 1659 preserved samples. A very high percentage of preservatives was found in Sheffield, 54·7 per cent., and in Leicester 70 per cent. The average for the provinces was 46·9, for London, 42·7. The poor and rich districts of London are equally treated to preservative additions.

Butter supplied to hospitals was found medicated in nearly every case.

Temperance beverages are very largely drugged, chiefly with salicylic acid and sulphites.

Milk is much more largely drugged in the summer than in the winter. Most potted creams contain boron at all seasons.

In London salicylic acid was found in meat juices, syrups, jams, lager beer, wines, British wines, lime juice; formaldehyde in milk; boracic acid (100 grains in a gallon !) in milk.

Invalid foods, including peptones, beef jellies, are nearly all drugged.

Boric acid, etc., are sold to farmers and used by them; often the dairyman adds more, and sometimes the cook adds some further preservative or improver, so that the consumer gets a dose much heavier than the doctor would sanction in a special case of illness; and this drugging is not temporary, but continual.

Colouring matter is very largely employed for dairy produce. Coal-tar colours are being substituted for vegetable dyes. These are also being very much used for confectionery and temperance drinks. Butter from Holland, Australia, and the United States is very

commonly coloured. The effect of coal-tar dyes on the human organism is not yet known.

They are found in hams, fruit, jellies, jams, sausages, sugar crystals (for giving fictitious appearances of origin), sweetmeats, meat foods, dairy products (where annatto is not used), margarines, sauces.

Sulphuric acid is used to colour pickled cabbage, oxide of iron, etc. to colour sugar-plums; copper sulphate, to colour peas. The Representative of the London Chamber of Commerce considered 2 grains of sulphate per pound of peas the minimum amount necessary for the trade. It is astonishing that it is considered necessary for a "trade" to add any poison whatever to their customers' food.

As regards preservatives of milk, the prevailing opinion of the public analysts was that they should be totally prohibited. Some of the medical officers of health thought that the persistently high infant mortality in summer might be partly explained by the increasing use of chemical preservatives. All the medical officers were practically unanimous in recommending the prohibition of all preservatives in milk. The burden of proving harmlessness should be upon the persons using these drugs. The surgeon of the General Hospital at Nottingham, from his experience, believed that, taken in daily doses of 10 to 20 grains, boracic acid is followed by dyspepsia "sufficient to make life miserable while it lasts." Sir Lauder Brunton considered its use injurious in many cases. Moreover, the perpetual use of drugs may nearly nullify the effect of a similar compound medically prescribed. And there are many conditions of the

system in which these surreptitious drugs are distinctly noxious.

Formalin, by entering into combination with proteids, actually deprives the consumer of part of the nourishment of his food, and so inflicts a real loss upon him.

"In ordinary life, what actually occurs is the simultaneous ingestion of more than one preservative." And some persons are extremely sensitive to certain drugs such as these preservatives.

Butter from all countries, except Denmark, frequently contains boracic acid.

There is evidence pointing to injurious effects of boracised milk upon young children. Sometimes as much as 80 grains in the pint is found in London, and no doubt elsewhere.

A very serious bye-effect of using preservatives is the neglect to encourage cleanliness from the time the milk leaves the cow till it reaches the consumer.

In Denmark the use of all preservatives in milk is strictly prohibited. Cooling arrangements are found sufficient to preserve the milk in transit. Similar means have been found equally effective by certain large contractors in England.

Cream, largely used by invalids, is very generally highly drugged; indeed, the taste of shop cream is detestable to a delicate palate.

The wonderful stupidity of the public (this is unofficial) in desiring a vivid green with their vegetables encourages the copper poisoning used for peas, etc. The Commissioners are strongly of opinion that such poisonous substances should be rigorously excluded, that formalin or formaldehyde should be

prohibited and salicylic acid limited, that colouring or drugging milk should be made an offence, that the boracic addition to cream and butter should be limited, and that preservatives of all kinds should be prohibited in articles of diet for infants and invalids.

Interesting evidence was given by many witnesses. Dr. Robinson, member of the Royal College of Surgeons, reported the pernicious results of taking boracic acid in several cases by healthy persons and by invalids, and gave a very strong opinion on the encouragement of dirty habits and improper dairy conditions by the use of preservatives. The amount taken by a baby in one day of boracic acid in milk only slightly preservatived would be sufficient greatly to disturb its digestive organs.

Similarly Dr. Winter Blyth stated that he had not the slightest doubt that a certain amount of infantile diarrhœa, a very fatal disease, is due to the use of preservatives. Formalin is a poison and antiseptic, and very dangerous as used in milk.

Nutrition Investigations. U.S. Department of Agriculture. 1900.

The Effect of Muscular Work upon the Digestibility of Food. 1901.

Nutritive Value of Bread (*Investigations on the*). 1900.

Eggs and their Uses as Food. 1901.

Food and Drug Adulteration. 1894.

"That almost every article of food and drink used in our country is adulterated to a greater or less extent is proved most conclusively by a vast amount of information." . . . The effect of these sophistica-

tions can be truthfully said to be as broad as the continent. "The character of the adulterations is chiefly commercial fraud. But ignorance is no excuse for the wholesale destruction of life by the addition of poisonous pigments to many articles of food, especially confectionery, cream, and like articles." There are numerous cases of poisoning from eating cream, candies, cakes, cheese, pickles, canned goods, etc. Adulteration amounts to 1,114,000,000 dollars annually. For having health injured or life taken 135,000,000 dollars is paid.

Among adulterations of alcohol are methyl alcohol, fusel oil, tannin, boxwood, water, colouring matter, burnt sugar; of gin—turpentine, etc.; of bread and cakes—ammonia (injurious); of baking powders—alum; of beer—burnt sugar, quassia, coriander, cayenne pepper, soda, salt, salicylic acid, glucose, tobacco, *cocculus indicus*; of black pepper—a vast variety of refuse; of bread—alum, sulphate of copper, ammonia, rye flour, etc.; of butter—oleomargarine, butterine, lard, alkalines, beef suet; of candy—tartaric acid, glucose (10 or 20 per cent.), cotton and olive oil, chrome yellow, soapstone, etc.; of dried apples—zinc and copper weighted with water and syrup; of infant foods—wheat flour, etc.; and in milk foods there is often no milk.

From the *Daily Express*, March 16 and 19, 1904—A large supplier of milk to provincial towns, when his arrangements were found fault with, spoke as follows:—"We must not send any more of our milk to our old customers, since the place has been condemned. Never mind, there is a splendid market in London. It is good enough for London." Dr. Newman, medical officer for Finsbury, says a continual battle is being

fought against typhoid, diphtheria, consumption, and scarlet fever; 300 epidemics of scarlet fever, typhoid, and diphtheria have been traced to milk in recent years; and, in addition, countless cases of stomach irritation, etc., are due to dirty milk.

The percentage of adulterated milk has been found to be about 10·3 in twenty large towns, 10 in the rest of England and Wales, and 15·6 in London. Of eighty-two samples of milk taken on Sundays, 23·08 were found to be adulterated.

Dr. Newman states that there are four opportunities of contamination, from (1) the farm, (2) transit, (3) after arrival at the depôt, (4) the consumer's home.

Milk arrives in large quantities about 3 or 4 a.m. in London; at 6 it is at the milkshops. When consumed, it is at least 12, some is 18, and some 24 hours old. Small quantities are sold in shops containing all sorts of articles, such as oil, soap, candles, bacon, blacking, toffee, etc. Restrictions are put on English farms, says Mr. Kelly, secretary of the Dairy Farmers' Association, and not on foreign supplies. Out of seventeen foreign samples analysed, fourteen were found to be adulterated and only 3 up to the standard.

From the *Herald of Health*, Feb. 1903—Formalin is largely used for the adulteration of milk. This drug is a strong poison, and destroys digestion; even a very small quantity spoils the health of children. One drop placed on the hand will take the skin off. Mr. Jeed, public analyst for Islington, in his last quarterly report describes the adulteration of food in his district as appalling, and it is quite as bad in many others.

An expert of New York is reported to have

analysed articles in common use there with the following result :—

Breakfast.—Smoked beef, containing *borax*, stewed in cream containing *boric acid* ; codfish cakes, containing *borax* ; milk, *formaldehyde* ; maple syrup, *glucose preserved with sulphurous acid* ; sausages, *borax.*

Lunch. — Clam broth, containing *borax* ; cold tongue, *fluoride* and *borax* ; jam, *salicylic acid* ; cider, *salicylic acid.*

Dinner.—Cocktail, cherry preserved with *sulphurous acid* ; Hamburger steak, *sulphites* ; tomato catsup, *benzoic acid* and *aniline dyes* ; canned corn, *benzoic acid* ; claret, *salicylic acid.*

Mr. T. Myddleton Shallcross, an architect, has recently contributed articles to the *Liverpool Journal of Commerce*, asserting roundly that only 1600 samples of milk are there analysed, while the city consumes 11,000,000 gallons per annum. The percentage of adulteration detected he states as follows :—

Almonds, ground	25·0	Margarine	9·52
Black currant wine	50·0	Milk, new	11·18
Bread and butter	33·33	Pepper, black	100·0
Buttermilk	100·0	Pepper, white	21·62
Cream	35·71	Peas	55·5
Elderberry squash	100·0	Raspberry wine	50·0
Ginger, ground and whole	3·7	Rice, ground	20·0
Ginger wine	57·14	Shrimps, potted	33·33
Jams	25·92	Sweetmeats	3·03
Lard	22·72	Vinegar	16·6
Lemon squash	100.0	Wine, unfermented	100·0
Lime juice cordial	60·0	Zinc ointment	57·14
Mace, ground	20·0		

The death-rate of Liverpool, he observes, is not only high, but rising.

At Brentford recently a doctor, in giving evidence

in the case of a dairyman, said that two kittens were experimentally fed, one on pure milk, the other on milk containing borax. The last died within a month, the former throve. The dairyman sold milk containing 17·7 grains of boracic acid per pint.[1]

In 1903 a farmer was fined £5 for adulterating milk with formalin, "pronounced by the most distinguished men of the day to be a most dangerous poison." Such a fine is shamefully inadequate.

"Temperance" Drinks, and Others.

A good many "temperance drinks" still contain liquor more potent than their name would imply, according to the chemist of the Government laboratory. Dr. Thorpe, in his newly published Report, states that out of 852 samples of "herb beers" and other temperance beverages, which were analysed in the past year, no fewer than 260 contained more than two per cent. of proof spirit—the limit above which they cannot be sold without an excise licence. Nine samples contained over six per cent. of spirit, and one had as much as nine per cent.

Despite the precautions that were taken after the "arsenic scare" of a few years ago, the Government analysts found that thirty-four out of 1218 samples of beer and brewing materials contained enough arsenic to be dangerous to health. The brewers were warned to destroy the beer or materials from which the samples had been taken. Of samples of finished beers, taken from publicans, one out of every eight was found to be watered.

Dr. Thorpe's department has to examine many

kinds of substances, from butter to gold lace, in the course of the year. Concerning imported butter, he states that the use of boracic preservatives is increasing; over forty-one per cent. of the samples last year contained these questionable chemicals, as compared with thirty-three per cent. the year before, and in the absence of any statute regulating the butter trade, nothing can be done. Cheese from the United States was found to be labelled as Canadian in twelve cases, and Dutch cheese was described as Danish. French and Dutch condensed milk was imported as Swiss milk. Some of the Dutch samples were made from skimmed milk, and their importers were prosecuted and convicted.

Again, of two samples of imported coffee, one was found to be nearly half chicory and the other was all chicory. An imported "coffee essence," on analysis, proved to be merely burnt sugar. Goods imported as "chinaware," "lace," "linen manufactures," and "perfumery" turned out to be ethyl chloride, collodin, spirit, and caramel respectively.[2]

CHAPTER XIV

Supplementary

The very remarkable results of experimental investigations on *Physiological Economy in Nutrition*, by Russell H. Chittenden, Ph.D., LL.D., Sc.D., Director of the Sheffield School of Yale University, have just been published.

A number of instances are given showing how health and strength have been recorded by careful physiologists as maintained on a much smaller diet and much smaller proteid weight in the diet than has generally been assumed as necessary.

Thus a vegetarian examined by Voit lived very well on a purely vegetable diet, with 8·2 grms. of nitrogen.

Similar results were found in California, by Jaffa, with fruitarians and nutarians (1901–1902, United States Department of Agriculture).

Professor Chittenden's experiments were made with five university professors and instructors, thirteen volunteers of the hospital corps of the army, and eight students, thoroughly trained athletes.

The author had himself previously made experiments on himself, reducing his diet gradually to a large extent. His health improved; a rheumatic joint got well permanently; headaches and bilious attacks

ceased altogether. Either no breakfast, or a very slight one, a fairly substantial lunch at midday, and a light supper answered very well. With diminished proteid there is increased vigour.

The Voit standard [probably this is not above the customary physiological estimate] required 118 grms. of proteid food daily, of which 105 grms. should be absorbable to maintain nitrogen equilibrium, physical vigour, and general tone. The new experiments showed that one-third of this amount was sufficient; indeed, physical and mental efficiency were at their best. Physical work in the case of the author was moderate, and hard work would doubtless require more food.

"Physical economy in nutrition is easily attainable, and does not involve the adoption of vegetarianism. It does, however, mean temperance and simplicity in diet," . . . which eventually becomes a habit and satisfies appetite.

In his general summary of the results of these most thorough and valuable experiments, Mr. Chittenden concludes that young and vigorous men, accustomed to athletics and muscular work, can satisfy all the physiological needs on a quota of proteid in their diet equal to one-half or one-third of that commonly consumed by men of that stamp. The reduction was accompanied by a decided increase of muscular power at the end of the nine months.

"The athlete, as well as the less active man, or the professional man, can meet all his ordinary requirements with an intake of proteid food far below the quantities generally consumed, and this without increasing in any measure the amount of non-nitrogenous food."

"Any excess above what is really needed imposes just so much of an unnecessary strain upon the organism."

"Moderation in diet means a great saving in the wear and tear of the bodily machinery."

The liver and kidneys would be saved from many diseases.

Less proteid means less products of the purin type, xanthin, hypo-xanthin, guanin, adenin; less uric acid.

Several of the persons under experiment obtained relief from gouty or rheumatic symptoms.

Mr. Chittenden, though not unfavourable to a vegetarian diet, considers that nature never intended man to live solely on a cereal diet, or any specific form of food to the exclusion of all others.

This, taken literally, would condemn large populations which have shown extraordinary energy and national longevity without calling in the slaughterer's axe, and would commend the omnivorous and insect-eating aborigines of Australia. Even the cannibal might put in a claim for his "specific form of food."

But Professor Chittenden's results are too valuable for the prospects of the race to make any objection agreeable. After all, the plant world contains endless variety.

"It is one of the axioms of physiology that the majority of the diseases of mankind are due to, or connected with, perversions of nutrition."

Most emphatically may we concur with the writer in becoming "more and more impressed with the importance and significance of the results in their bearing on the broader problem of general physiological economy in nutrition." The healing power of this teaching is immense. Armed with this discovery, we

may look forward to "happiness becoming more conspicuous in the life of the community."

Interdepartmental Committee on Physical Deterioration.—Evidence of the Bishop of Ross.—In the late fifties and early sixties, the food of the peasantry (in Ireland) consisted of potatoes for one meal, Indian meal and oatmeal for two other meals, as a rule, and there was very little bread used. . . . Wheaten bread has become of very common use in Ireland, and has superseded Indian meal, oatmeal, and even to a large extent the potato. Milk was formerly very largely used with potatoes and porridge. The present food is bread and *a very bad form of tea.* Many families have practically no other food than bread and strong tea all the year. The peasantry and labourers have the idea that this is a higher form of food than potatoes, porridge, and milk, and this idea grows more and more obdurate. "I have known young children only a few months old being fed on bread and tea." The peasantry used to have skim-milk, now they have only separated milk, "which is undrinkable."

Q. 10,800. *Dr. Robert Jones.*—"Chronic indigestion from beer is very common both in men and women. Beer-drinkers are liable to a kind of acid fermentation with gastric catarrh, in consequence of which they are often unable to take food, and what they take is indifferently assimilated." This leads to ill-nutrition and deterioration.—10,823. Insanity from drink in women is much more marked than it used to be. Also local forms of motor paralysis.—10,834. The life of women is more assimilated to that of men.—10,837. Alcohol perverts the moral nature, attention, judgment, the higher states of consciousness, and

memory; it enfeebles the will. Consequently the children of heavy drinkers are neglected; the parents have become incapable.

Mr. Eccles.—10,713 *et seq.* Alcoholism in the mother affects the child before it is born; later, the alcoholic environment produces deterioration. There is much infant mortality from alcoholic mothers, whose milk is poor. The staple food of the poorest classes in towns is fried fish, and "I have seen a child of nine months old eating shrimps." There is a vast deal more pleasure, requiring money wasted on it, than formerly.

Dr. C. R. Browne, Dublin.—9676 *et seq.* The Lunacy Commissioners ascribe some of the increase of lunacy in Ireland to the excessive quantity of tea-drinking. As to tea-drinking, "where the people took comparatively little a few years ago, the amount taken now is something tremendous. Only the other day, in Queen's County, I found that in every cottage for some distance round the place where I was they took it at all meals, and it was generally kept in brew on the hob and taken in sups all day." Round the coast the staple diet is fish, and inland it is potatoes and tea, instead of barley-meal and oatmeal. The country population were much finer than the townspeople in physique, but the general opinion is that they are deteriorating. The farmers' families, who get plenty of milk, are strong and well-built.

Indian meal has taken the place of oatmeal in parts of Ulster. In parts of Kerry, Limerick, Cork, and very many of the southern counties, if you go into a small cottar-farmer's house at dinner-time you will find a skib of potatoes. A man will take about a

quart of milk and half a stone of potatoes for his dinner.

Dr. Joseph Wigglesworth.—8982 *et seq.* Alcohol is an extremely potent cause of lunacy. The children of drunken parents often have unstable or badly developed brains. Excessive drinking in mothers has an extremely pernicious effect on their offspring.

Dr. Eustace Smith. — 8440 *et seq.* The proportion of mothers who can nurse their children, already small, is diminishing very much. In the East End of London tinned things are largely used. Tinned milk is left open in a horrible atmosphere, and becomes quite poisonous. The Jewish children are much fatter and sturdier; Jewish mothers attend to their children more carefully.

Mr. W. H. Libby, headmaster of Board Schools at Walworth, gave evidence concerning the feeding of school children with nourishing vegetable soups, brown bread, whole-meal cake, etc., provided by Mr. Arnold Hills. Though there was a strong prejudice against the vegetarian cookery, and the experiment was largely suppressed, the children asked, with only one exception, preferred the vegetable soups and brown bread and cakes, and they certainly throve upon this fare, which animal soup and white bread was brought to replace.

Mrs. Close.—2554 *et seq.* The people are deteriorting mentally and bodily. The cooking in Scotland and in Cheshire (where Mrs. Close lived) was formerly excellent. The knowledge of cookery has gone down immensely. In England the sense of duty has diminished, and pleasure and idleness have increased. In Auvergne the people lived on cabbage soup, with

bacon, potatoes, and bread; buckwheat, cheese, curds and whey; fruit, carrots, wine, etc.; and in Touraine, on cabbage soup, beans and bacon, mutton or beef, cheese, wine, etc. "The nearer you come to London, the more infamous the food." The cooking in Yorkshire is still good. In many parts tea is made frightfully strong, bread is very bad; the children are sent to school on this miserable stuff. Adulterated tinned milk, extremely bad bacon, and extremely bad bread are the fare of large numbers of the British peasantry.

Dr. Lewis Hawkes (Q. 13,217) maintained that "half these ailments are due to beer and bad spirits." Girls now go into public-houses, contrary to former custom.

Tea, pickles, vinegar, and a little bread form the fare of large numbers of factory girls; strong tea early and late. They naturally get dyspepsia, and are difficult to treat.

Dr. Airy related how, by a system of food supply in Birmingham at a cost of a halfpenny a meal, large numbers of children were helped and strengthened. By incessant experiment, lentil soup, with bread and jam, was found to be the best. The teachers reported that the difference in the children was perfectly extraordinary.

In a paper on "Economic Nutrition" in the *Contemporary Review* (July 1904), Mr. E. Wake Cooke writes that a more thorough application of old half-developed truths has produced some startlingly novel results; a movement is arising which promises to solve problems that have baffled reformers from time immemorial.

The new discoveries show us how to escape many

sufferings, and to gain greatly in physical and mental efficiency.

The writer refers chiefly to the discovery of Mr. Fletcher concerning the immense importance of thorough mastication, and the very much smaller amount of food needed when the habit has been acquired. When the food is chewed, say 100 times, one-half to one-third the ordinary quantity suffices, and there is a great increase in health and activity. Mr. Fletcher's experience with himself is most remarkable, and well deserves imitation. He rises at 4 a.m., and does all his work before noon, when he has his first meal, a light one. The extreme importance of thorough mastication has been shown by Dr. Harry Campbell in articles in the *Lancet*. It would do away with appendicitis and a vast amount of indigestion and other diseases, including probably many cases of cancer in the stomach. (*Lancet*, July 11, 18, *etc.*, 1903.) The discovery is considered by Dr. Dewey to be of extreme importance for the prevention of disease.

The Future of the British Race.

In a recent very valuable address to the Society of Arts, Dr. Robert Jones has put forward the following facts and views, among much else of importance, bearing on the future of our race :—

In one district of London, during a period of ten years, the average annual infant mortality was 226 per 1000 in the first year of life. It was higher in 1902 than in 1881.

Though the general death-rate has declined, degeneration and longevity may proceed *pari passu*.

The hurry, the rush, the egotism, and eagerness for pleasure, and the overstrain, with high arterial tension, has much increased the number of the insane.

There are new forms of heart disease. Sedatives for brain and heart are used as never before.

In 1888-92 the senile cases in asylums were 11·6 for males, 10·2 for females; in 1897-1901 they were 15·6 and 14·0 per 10,000.

The amount of adulterated, preservatived, and unwholesome food sold is enormous; much is distinctly poisonous, especially tinned foods, and mothers are too ignorant and ill-brought-up to provide a proper diet for their children. Thus the race deforms and degenerates.

Bad teeth make a difference to the adult between robustness and the many forms of ill-health due to dyspepsia. The teeth of children should be attended to.

Girls should be trained to become good wives and mothers. Cooking, domestic economy, and household duties should be the primary consideration.

In primitive states of society insanity is rare.

Alcohol is one of the most potent causes. Directly and indirectly, or in combination with others, it is responsible for much more than one-fifth of all cases.

Town environment is not favourable to self-restraint, and a large proportion of countrymen coming to town become insane through drink.

Tea, coffee, and tobacco-smoking cause many breakdowns. Forty-four out of fifty-three States of North America have penalised juvenile tobacco-

smoking, prohibiting its use generally until about seventeen.

Town life brings lack of proper nutrition, overcrowding, bad surroundings, poverty, and crime, intimately related to insanity.

There were in London in 1891 no fewer than 174,500 single-room tenements, each sheltering three to twelve persons.

The food of the poor in cities is deficient in quality and quantity. Eighty thousand persons migrate every year from country to town.

A new and favourable environment is the strongest force both to modify and to control the defects of a vicious heredity. The physical and psychical characters can be altered through the environment. Where, however, bad tendencies have been inherited also from ancestors beyond the parents, the evil is much more difficult to dislodge.

Swedish drill and physical exercises are excellent correctives of neurotic heredity.

The upbringing and feeding of children should be made familiar to every mother. Children should be adequately and properly fed, and they should have the joys of life brought before them. They should have open-air playgrounds, and some one to organise their games, as in Germany. Finally, no effort should be spared to realise Mr. Ebenezer Howard's great scheme of the migration of industries into the country.

In his reply upon the discussion, Dr. Jones said that if we could find any practical solution of the problem of bringing the labourer back to the land, the difficulty with regard to degeneration would to a very great extent be solved.

Addenda on Diet in Various Countries.

Official Reports of Diplomatic and Consular Agents Abroad, 1871.—Mr. A. A. Paton, Consul at Ragusa, reported against the use of tea, coffee, and spirits on any occasion whatever. Lemonade, or else burnt barley, are good substitutes; the latter may be taken after dinner with advantage, instead of coffee. Early breakfast should be very light. Tea, coffee, etc. and heavy meals cause oppression and languor. Coffee greatly disturbs the process of digestion. In a fortnight the substitution of harmless drinks for tea or coffee becomes quite easy, and the "deprivation of these luxuries, with their attendant expenditure of nervous force, is far more than compensated by the serenity of mind resulting from abstinence" from them. A nap half an hour before dinner is considered much better than after dinner. The light diet recommended is found to conduce not only to health, but to an exhilarating flow of animal spirits.

Mr. Pakenham reported that in Belgium very many had for their entire subsistence potatoes with a little grease, brown or black bread, and a little chicory coffee. In quarries, mines, etc., the workmen had bread and butter, cheese, vegetables, bacon, salt pork, and sometimes other flesh two or three times a week, and coffee and beer for drink. Coffee is usually mixed with chicory.

At Antwerp coffee with chicory was largely drunk, beer only occasionally. "The Belgian artisan lives chiefly upon farinaceous or vegetable food."

At Para, Brazil, the workman lived on dried or salted fish or meat, with mandioca flour, coffee and

cachass. Vegetables were beyond his means, unless he had a garden.

In Saxony, Mr. Burnley reported that the *average* dietary was—6 a.m., two or three cups of moderately strong coffee, with $\frac{1}{8}$ lb. of white bread; 9 a.m., about a $\frac{1}{2}$ lb. of bread, with butter and cheese, often brandy. At 12, soup, with about $\frac{1}{3}$ lb. of flesh; 4 p.m., either coffee and bread and butter, or bread, butter, cheese, beer, or brandy. At 7, about $\frac{1}{2}$ lb. of bread, with butter and cheese, seldom meat, and a thin beer.

Among *workmen*—6 a.m., two or three cups of coffee, with $\frac{1}{4}$ lb. of bread; 9 a.m., $\frac{1}{2}$ lb. of bread and butter, or bread with bacon or cheese, and, as a rule, brandy. At 12, bread and butter, bacon or sausage, brandy, sometimes vegetables; 4 p.m., $\frac{1}{2}$ lb. bread and butter, sometimes with cheese, bacon, and brandy. At 7, $\frac{1}{2}$ lb. of bread and butter, potatoes, thin beer. The labourers in the country have less flesh, brandy, and coffee.

In Switzerland "the consumption of meat is much greater in the towns than in the country." In 1870 the stated consumption per head in Switzerland was 47 lb., against 68 in England. It was probably really considerably less, not counting foreigners.

"All classes alike live very frugally," principally on vegetables. "All drink coffee with milk at least twice a day," with a large proportion of chicory.

The Norwegian Diet was coarse bread, barley or oats, porridge, potatoes, salt fish, little flesh meat. Coffee was largely consumed by all classes.

Tartar Diet.—The Tartars are exceedingly carnivorous on occasion, but as a rule abstemious, living on

millet and mare's milk. They are "stout, hardy, spirited, fearless." (*Memoirs of Baron de Toit.*)

In Norway, meat which has been smoked or dried is kept for many months. Salt herrings are very largely consumed. A cup of coffee is taken on rising, a small glass of brandy at breakfast. This meal, among the well-to-do, includes ham, tongue, sausages, anchovies, cheeses, fish, potatoes, cold meat dishes, etc. Dinner consists of soup, fish, meat, and pudding. Beer and claret are favourite drinks. Supper includes beer, brandy, and meats like those at breakfast, with cheeses in variety. (*Vegetarian*, May 21, 1898.)

Diet of the German Workman.—A correspondent writing to the *Daily Chronicle* recently described the German workman's breakfast as consisting of black bread, sausage, rolls, and coffee; dinner—sausage, vegetables, soup; supper—bread, butter, cheese, coffee, etc. Eggs and flesh are not eaten daily in many parts.

Orkneys and Shetlands. — The people of the Orkneys and Shetlands are described as having taken to tea-drinking "with a zest unsurpassed by almost any other of the Queen's dominions. It is tea, tea, tea, literally from morning till night. . . . The black, boiling liquid is consumed in large quantities, with little sugar and no milk. This frequent tea-drinking is having a disastrous effect on the looks of the Shetland women. They age rapidly," etc. The Orcadian farmers use oatmeal largely, potatoes, milk, and plentiful tea.

"In Edinburgh and Glasgow the distinctive Scottish diet has almost disappeared, to be replaced by the pork, bacon, beef, slops, and white bread of more recent times." In many of the larger towns this sort of fare

has taken the place of the "halesome parritch" of Burns' days. An excessively vile, tough, and rancid pork, highly seasoned with salt, pepper, and saltpetre, is a common dish. (*Vegetarian*, Dec. 3, 1898.)

Spanish Workers. — The Spanish servants are stronger, harder, and more willing workers than their fellows in England. They live on bread, onions, fruit, savoury soups, fry or onions, beans, oil, tomatoes, etc. (*Vegetarian*, April 30, 1898.)

Beaver Indians.—The Beaver Indians of British Columbia live on flesh and wild fruits; they often eat 6 to 10 lb. of meat, and at other times they almost starve. The flesh diet causes a very great deal of scrofula and other diseases, so that they are dying out.

The British in Columbia eat much meat, and are great tea-drinkers. (*Vegetarian*, Oct. 8, 1898.)

Diet and Opium in China.—Opium-smoking in China is a cause of great physical evil, and at the same time economical evil as great. Mr. Parker's bearers were half-starved, ragged ruffians, but almost always opium-smokers. At many villages neither rice, nor eggs, nor sugar, nor fowls were obtainable, but Indian opium was always to be bought. Money was universally wasted upon expensive opium by those who could least afford it; poverty and misery resulted. This was in the Chehkiang province. The physique of the people was undoubtedly deteriorating. It is the Indian, not the Chinese, drug which does nearly all the damage.

The Japanese and Coreans do not use opium. The Japanese, though shorter than the Chinese, are of sterner and sturdier stuff. The Coreans are also superior in physique to the Chinese of some pro-

vinces. Opium-smoking can be left off suddenly without ill effects; this has been proved in the Hong-Kong prisons.

The population of China in 1853 was, according to official records, 400,000,000. About 1 man in 20 smokes Indian opium, and probably about 4 in 20 smoke Chinese.

A great many women, especially the Manchus, smoke opium.

A mandarin's principal meal usually consists of the following, or something of the sort:—A large bowl of hot rice, a bowl of rice water, an ounce or two of pork, sour cabbage, salt duck, smoked ham, shrimps, etc.; sometimes a very little wine or rice spirit; and a few cups of tea.

In some of the towns, and many parts of China, rats, mice, kittens, puppies, and almost any animal, if it happens to die on the road of plague or disease, is readily appropriated for food.

Milk is not, as a rule, drunk in China except in the north. In Annam and Burmah, milk had no place in the national diet. Cheese is not used.

Birds' nests, which are eaten at "first-class feasts, consist of the half-digested masses of fish and seaweed thrown up from the stomach of the swallow."

The Chinese do not drink cold water.[1]

In Japan (country) rice is considered a luxury, and is replaced by millet, beans, and a sort of macaroni. In an ordinary Buddhist native household, where no meat is eaten, a woman's rice-box is her larder. Only among the upper classes are sauces, eggs, and elaborate soups added to the simple fare. Two dishes are usual where guests are not frequent, rice and seaweed soups.

The daikon, a white radish, is very commonly eaten as a relish. These details are given by Mr. Douglas Sladen.[2]

Indian Fare and Strength. — Mr. Herbert Compton, in a book recently published,[3] states that the richer classes are very large eaters. "The Bengali's menu is varied, and his appetite enormous. Measure for measure, your Indian will far outstrip the European in eating capacity." Soup, fish, curry, rice cakes, puddings, porridge, pulse, and fruit are consumed apparently at one meal.

"The thriftiness of the peasant is marvellous." Rice is too much a luxury to be the common food. Millet, pulse, and other coarse grain form the staple, with salt and chillies for condiment. There are millions of peasants in India who exist on half an acre.

Referring to the Indian soldiers, Mr. Compton says: "Looking at their fine, stalwart figures, at the mere height, weight, bulk, and girth of some of them, it is difficult to credit the simplicity of their fare and the frugality of their lives in their native land. Most of them are vegetarians, and those big-boned frames and brawny muscles are innocent of any bolstering up with flesh food. Even in a country where meat sells at a penny a pound, the sepoy cannot afford such luxuries as beef, mutton, or goat, except on high days and holidays. Wheat and Indian corn are his staple food." In drink he confines himself to water and milk. He is a first-rate fighting man. There are few tasks he will not attempt.

Japanese Fare, Strength, Brain, and Endurance. —Mr. Cowen describes the Japanese in the war: "A wooden pail full of steaming boiled rice is brought

round, and each man fills his bowl; a dish of something like pickled cabbage, another of fish, and another of broad beans, or some such things, go round. . . . The rice-bowl may be filled three times, but the small saucerful of other things is seldom replenished. Sometimes there is preserved beef, in half-pound tins, and there are several other variations when possible. It is often said that the Japanese diet would not be enough to keep a foreigner in health and strength. This is mere superstition. We believe in meat mainly because meat has happened to be the diet of our ancestors. . . . The Tibetans eat practically nothing but meat, because the country grows nothing but pasture, and the meat diet has not made them a superior race. I have lived on Japanese food—soldier food—for weeks of the hardest work, and it nourishes as well as anything. It does not make fat, . . . but it makes muscle, bone, sinew, blood, and fire and brain, as the Japanese have proved. There are no hardier soldiers in the world." [4]

Sir Frederick Treves writes of the Japanese troops: "In physique they appeared to be splendid." There was no drunkenness when the companies were disbanded after drill. When regiments started for the front, the soldier's sweetheart would press upon her hero a bunch of flowers, not a whisky-bottle. There was everywhere an absence of swagger and bravado. "I never once congratulated a Japanese acquaintance upon a victory when he did not reply by expressing a regret that so many Russian lives had been lost." Extreme care was taken as to cleanliness and as to the wholesomeness of food. During six months of terrible fighting and exposure in a foreign country there was

only a fraction of 1 per cent. of deaths from preventable disease. In the Boer War 13,520 British soldiers died of disease, mostly preventable.

Sir Frederick gives a most horrible account of the slums of Chinese Canton and of the common food: "The Cantonese live mainly upon rice, fish, pork, fowls, and ducks." Also they consume loathsome stews of various sorts, and dogs, rats, worms, putrid eggs, entrails, etc.[5]

Mr. C. Kadono contributed an account of the diet of a family "in moderate circumstances" to the *Times* of 11th February 1905.

There are three meals a day. Breakfast (7 to 7.30) consists of miso soup (with vegetables, tofu, etc.), boiled rice, tea (sometimes a raw egg or boiled sweet soya beans or natto, etc.). Lunch (12), fish boiled in soya, vegetables stewed in soya, pickles, boiled rice, tea. Supper (6 to 6.30), soya soup (with vegetables, fish, etc.), raw fish with soya sauce, broiled or boiled fish, with vegetables (or butcher's meat or fowls and vegetables), rice, tea. Soya beans contain 33 to 42·8 per cent. of albumen, and 17 to 29 of carbohydrate, against 13·2 albumen in beef, 18·8 in mutton, 19·7 in chicken. Soya beans are eaten boiled. Miso is steamed soya, with barley, malt, rice, and salt, fermented—a brown pasty mass. Soya sauce is like miso, but more watery. Tofu is boiled soya, with hot water, strained and cut into cakes.

The fare of the bulk of the population is, of course, simpler. Ordinary adults eat 1 lb. 8 oz. to 2 lb. 4 oz. of rice per day—three bowls at each meal.

In Japan the upper classes nurse (breast-feed) their children for about a year. No child would get more that about half a pint of milk daily when weaned. It is looked upon as a luxury. "The Japanese rice is far more sustaining than the Indian." As to tea, boiling water is poured on, and the infusion is poured off at once; it is never allowed to stand, and hot water is never poured on the leaves a second time. There is much rheumatism, caused, Mrs. Earle thinks, by tea and fish. But we must remember the excessively hot baths taken daily and the draughty houses. "There is no gout." "The labouring classes I should call much stronger and healthier than the poor of Europe. They are hardier, and more independent of luxuries in food and domestic life." There is much more fresh air in the houses owing to the absence of glass windows. Mrs. Earle warns her readers against fruit, jam, marmalade, etc., in winter, owing to the tendency, in cold weather, of many persons to retain uric acid. Apples, however, are not included in the fruits which should be avoided.[6]

General Nogi, Commander of the Eleventh Division of the Imperial Japanese Army, has an immense reputation in Japan. "He became celebrated by his marvellous administration of Formosa. . . . He is one of the most cultured of living Japanese gentlemen. His scholarship is renowned." He is a writer of songs, this "wonderful old Samurai leader." Character, temperament, and ability have combined to give him almost unlimited influence. For a long time he subsisted on shojinryori, a diet "simple beyond all Western notions"—the diet of an ascetic recluse, for he retired for four years from the world. His high ideals of duty,

at a moment when vast preparations were being made for the coming crisis, forbade him all the comforts of home life. He is a warrior of the finest type.[7]

Iceland.—"The ordinary food of a well-to-do Icelandic family consists of dried fish, butter, sour whey (kept till fermentation takes place), curds, and skier (a very peculiar cheese), a little mutton and rye bread. As might be expected, this very meagre fare is not very conducive to health: scurvy, leprosy, elephantiasis, and all cutaneous disorders are very common; while the practice of mothers to leave off nursing their children at the end of three days, feeding them with cow's milk instead, results in a frightful mortality among the babies."[8]

Arctic Conditions.—It is a common stopper to the advocate of a humane way of living to put the question: "What would you do in the polar regions?" The answer is very simple, "I would not live there; and I consider it a wrong to choose ice and darkness when the greater part of the world is full of life and beauty." The fact, however, is that it would be quite easy to live well on the products of plants in the coldest climates. The Finns have proved this. The finest oils from nuts and fruits are equal to any cod-liver oil or bear's fat. M. Pelletier lived entirely without flesh food during his recent sojourn in Alaska. The severe cold had very little effect on him.

Tahiti.—Captain Cook described the people of Otaheite (Tahiti) as follows:—"As to the people, they are of the largest size of Europeans. The tallest that we saw was a man upon a neighbouring island who measured 6 feet 3 inches. The women of the superior rank are also in general above our middle stature,

but those of the inferior class are rather below it, and some of them are very small. Their natural complexion is brunette. The shape of the face is comely. . . . Their teeth are almost, without exception, most beautifully even and white, and their breath perfectly without taint. In their disposition they seemed to be brave, open, and candid, without either suspicion or treachery, cruelty or revenge. . . . They were, however, all thieves.

"As to food, the principal is the bread-fruit. . . . If a man plant ten trees—which he may do in about an hour—he will fulfil his duty to his own and future generations as well as our people fulfil theirs by ploughing and reaping as often as the seasons return. Cocoa-nuts, bananas, plantains, and a great variety of other fruits are also eaten." "Salt water (sea) is the universal sauce." "For drink, they have nothing but water or the juice of the cocoa-nut." A great deal of fish is added at times to the vegetable diet.

The produce of the islands included thirteen sorts of bananas, a fruit like an apple, sweet potatoes, yams, cocoas, jambu (a delicious fruit), ahee (a pod fruit), various other fruits; and hogs, dogs, and poultry.

"The quantity of food which these [chief] people eat at a meal is prodigious. I have seen one man devour two or three fishes as big as a perch; three bread-fruits, each bigger than two fists; fourteen or fifteen plantains or bananas, each 6 or 7 inches long and 4 or 5 round; and near a quart of the pounded bread-fruit." Custom required them to have their meals not in company, but in solitude.

In New Zealand, Captain Cook found the people "equal to the largest of those in Europe, stout, well-

limbed, and fleshy, exceedingly vigorous and active, mild and gentle towards each other, implacable towards enemies." "Their principal food is fish," at certain times, "and fern root, yams, clams, and potatoes. . . . Water is their universal liquor, and if they have really no means of intoxication, they are in this particular happy beyond any other people that we have yet seen or heard of." "As there is, perhaps, no source of disease, either critical or chronic, but intemperance and inactivity, it cannot be thought strange that they enjoy perfect and uninterrupted health."

Ancient Education and Health. — In Rollin's Ancient History I find the following allusions[9] to education, derived, no doubt, from Xenophon's *Cyropædia* :—The public good, the common benefit of the nation, was the only principle of all the Persian laws. "The education of children was looked upon as the most important duty, and the most essential part of government. . . . Everything was regulated, the place and length of their exercises, the times of eating, the quality of their meat and drink," etc.

"The only food allowed either the children or the young men was bread, cresses [vegetables], and water. . . . They considered that a plain, frugal diet, without any mixture of sauces or ragouts, would strengthen the body, and lay such a foundation of health as would enable them to undergo the hardships and fatigues of war to a good old age."

"When the Medes and Hyrcanians were returned from pursuing the enemy, Cyrus made them sit down to the repast he had prepared for them, desiring them only to send some bread to the Persians, who were sufficiently provided, he said, with all they wanted,

either for their ragouts or their drinking. Hunger was their only ragout, and water from the river their only drink."

To the very last, Cyrus enjoyed a vigorous state of health, which was the fruit of the sober and temperate life which he had constantly led. At a very advanced age " he still enjoyed all the vigour and advantages of youth."

Of the Egyptians, M. Rollin tells that the quantity and quality of what the king was to eat and drink were prescribed by the laws, and that this was a custom in Egypt, whose inhabitants were all sober, and whose air inspired frugality.

Abbé Fleury, in his book on the manners of the Israelites, truly observes that " it is the peasant who feeds the citizen, the magistrate, the gentleman, the ecclesiastic ; . . . all must ultimately be owned to be received from the products of the earth ; and thereupon he shows how the cultivation of the land is a finer pursuit than " sauntering from place to place, gaming, and expensive diversions."

Honouring the cultivators and owners of flocks and herds, the Egyptians continued for thousands of years to occupy the banks of the Nile. No man was allowed to be useless to the State.[10]

Professor Lawrence, F.R.S., in one of his lectures in 1823 at the College of Surgeons, said that " in the periods of their greatest simplicity, manliness and bravery, the Greeks and Romans appear to have lived almost entirely on plain vegetable preparations ; indifferent bread, fruits, and other produce of the earth are the chief nourishment of the modern Italians, and of the mass of the population in most countries of Europe.

Of those more immediately known to ourselves, the Irish and Scotch may be mentioned; who are certainly not rendered weaker than their English fellow-subjects by their freer use of vegetable aliment."

Parisian Workmen.—Miss Betham-Edwards writes: The fare of a French Parisian workman is a basin of soup before setting out to work. Water in which vegetables have been boiled is set aside for this, and a bit of butter or bacon is added, and there will be a savoury mess in which to steep his pound of bread. Bacon costs 1s. 6d. a pound, and the high price of butter causes the poor to use margarine. Bread is 2d. a pound, meat 1s. 2d. to 1s. 6d. and 2s., sugar (was) 5d. to 6d., tea 2s. 6d. to 6s., coffee 2s. to 2s. 6d., Gruyère cheese 1s. to 1s. 4d.; and bananas are 2d. each. Good coals are £2, 16s. a ton.

"*No Breakfast.*"—The cutting-out of one meal seems to bring very great benefit to many persons, but could certainly not be recommended to all. A correspondent writes to the *Vegetarian Messenger* of January last that, though it was a "severe wrench" to him to give up breakfast, after eight months' trial of only two meals a day he is in perfect health, stronger physically and mentally than ever before. All the rest of the family and household, including two boys, have been particularly well since adopting the vegetarian diet and two-meal plan. Colds and headaches have gone.

Another correspondent has gained 13 lb. weight since adopting the plan, and has improved in health from a "run-down" condition.

In a letter from the British correspondent with the troops at Colesberg, in the South African War, the

following remarks occur : " As a rule, the troops have, before starting, say, at four a.m., a cup of coffee and a biscuit. The march will often last till three or four in the afternoon." At three or four in the afternoon they would have a good solid meal of fresh meat, jam, biscuits, tea or coffee, " and they do not wish for any more for the rest of the day. Their diet is not lowering; the men look the very picture of health and strength." These troops, following De Wet, had " undergone more than the ordinary hardships."

Trappist Fare.—It is eight hundred years since the order of Cistercians was founded at Citerz, in France. The Trappists belong to this order. About the same time the monastery of Oelenberg, in Alsace, was founded. " All visitors to Oelenberg testify to the excellent appearance of the monks. They abstain from flesh, fish, and eggs, and live on vegetables, bread, salad, cheese, fruit, and water. Rarely they have a little ale. On fast-days they eat even less than the ordinary simple fare."

Christmas Fare.—Dr. Haig writes : " I make bold to say that Christmas, with its terrible carnage and gluttony in the name of the 'Lord of Love,' sends hundreds and thousands to an untimely grave in the three or four months that follow." The wrong use of food, and the retention of waste products in the body, causes a fatal reckoning to come in the spring.[11]

Professor Victor Horsley, F.R.S., in a very instructive lecture for the Lees and Raper Trust, has told of the most recent scientific results in researches on the effect of alcohol on the brain. Exact measurements proved that, although a person might believe that he

was working better, even a small quantity of alcohol reduced brain activity; both rapidity of thought and the rate of voluntary movement were affected. Larger doses caused the brain cells to shrivel and contain mere pigment, instead of the vital and necessary nucleus. He also demonstrated the close connection between alcohol and insanity. "Total abstinence must be our course if we follow the teaching of scientific investigation and the dictates of common sense."

Milk and Meat Supply.

In a paper read at the Royal United Service Institution, Dr. Cantley said that it was difficult for the rich, and almost impossible for the poor, to obtain a satisfactory milk supply in towns. Owing to want of legislation for efficient control, milk was drunk in London which had been declared unfit for sale in the country. London milk was said to contain, in 14 per cent. of samples, the tubercle bacillus. "Milk is often a filthy fluid." "The only plan for dealing with the matter thoroughly seems to me to be the municipalisation of the milk supply."

Dr. G. J. Cooper, formerly for some years Chairman of the Public Health Committee of the London County Council, said, in an interview with a representative of a daily paper on 2nd November, that the Council has no power to exclude infected milk supply from London as a whole. "I have seen the horrible conditions under which our milk supply is carried on." Four hundred or five hundred cases of scarlet fever occurred lately through a convalescent youth employed

as milker. "Milk is the very best soil for the cultivation of the bacilli of epidemic diseases."

As to infected flesh, Dr Alfred Carpenter said in 1879, as President of the Preventive Medicine Section of the Sanitary Institute, that "our domestic animals fell a prey to every kind of epidemic. . . . All sanitary law is as a rule ignored by the farmer. . . . I was not surprised when I heard an inspector from the Metropolitan Meat Market declare upon oath that 80 per cent. of the meat which was sent to the London market was the subject of tubercular disease." They are supplied, says Dr. Carpenter, with foul air, foul water, and often with musty food.

In this connection the words of Charles Kingsley have a direct bearing: "A dying child is to me one of the most dreadful sights in the world. . . . The most beautiful and precious thing that earth can have. . . . What has God given to this thankless earth, and what has the earth thrown away, in nine cases out of ten, *from its own neglect and carelessness*? . . . You, and not the 'visitation of God,' are the cause of epidemics. . . . Let our hearts be bowed as the heart of one man, to say, that, so far as we have the power, so help us, God, no man, woman, or child in Britain . . . shall die henceforth of preventable disease.

"Every social improvement, and most mechanical ones, have had to make their way against laziness, ignorance, envy, vested wrongs, vested superstitions, and the whole *vis inertiæ* of the world, the flesh, and the devil. . . . A bit of sanitary reform is a sacred duty, from which I no more dare turn away than from

knocking down a murderer whom I saw killing a woman."

And cruelty and neglect towards men has its counterpart in cruelty and neglect towards animals.

"I have seen," says Mr. Sidney Beard, "the sweat of agony rolling from a gentle mother cow, and every hair standing out in dreadful, tense terror as the fatal chain dragged her by the head across the blood-stained floor. Fighting for every inch, slipping in the gore of her fellows, with starting eyeballs and short breaths of concentrated terror, she was forced onward to her doom; the cruel twisted tail behind, the inexorable windlass chain in front. Each inch was a very lifetime of agony, each moment a century of pain, and for what? To benefit humanity?—No."

The Ill-Health of London.

Dr. Vivian Poore has shown that the annual rate of mortality in the central districts of London did not materially decrease between 1841 and 1891.

The "corrected" death-rates, meaning the rates not including the deaths of non-residents in hospitals, were as follows for the various districts in 1891:—

Western, 19·5;	Eastern, 23·2;
Northern, 20·0;	Southern, 20·3.
Central, 27·6;	

The death-rate for Central London was thus higher than that of any big town in England. But it was really higher than appears from the figure—first, because the correction for age-distribution has not been made, though the central districts are constantly supplied by

selected adults from the country; second, because no correction has been made for the large number of Londoners sent to the country ill and dying. The infant mortality figure for the first quarter of 1892 was, for the whole of London, 179: for the Strand, 317; the City, 244; Holborn, 229; St. Martin's, 217; Clerkenwell, 212.

"Not only does every human being require for his support [at least] a certain definite average amount of pure air and pure water, but also a definite average amount of the earth's surface to provide him with food and clothing." Dr. Poore estimates that, on the average, one acre is about sufficient for the bare support of one person. If the man "really inhabited his unit there need be no difficulty about fresh air, water supply, or burial." Dr. Poore might have added "nor about drainage, food supply, fresh vegetables, playgrounds."

Sir Douglas Galton quoted Dr. Farr's discovery, that in proportion as you have a population concentrated on a small area, so will the mortality of that population be increased. The grandchildren of people who live in towns and who grow up, are only half as numerous as those of labourers who live in healthy country districts.

"I found in an insanitary district in St. George's in the East, where the death-rate was 31 per 1000, the sickness-rate was 270 per 1000, or 9 cases of illness to 1 death. In the worst parts of the district the sickness rate was 620 per 1000, or 20 to 1 death." Dr. Farr calculated the future wages of an agricultural labourer at twenty at £637; so that if he died at that age the sum of £637 is lost to the community.

Notes on Rural Depopulation.

According to the *Manchester Guardian* of June 17, 1901, the rural districts of the country show an increase of population of 2·9 per cent., while the urban have increased 15·2. The drain to the towns is in ten years about 9 per cent. of the total rural population. The rural population has fallen from 25 to 23 per cent. of the whole country. The people of towns with over 50,000 has increased from 42 to 44·5 of the whole population of England.

According to Prince Kropotkin, the Belgians aim not, as we do, at producing £5 worth of hay, but £100 worth of vegetables, cabbages, carrots, etc., to the acre.

In America, at a recent competition, the first ten prizes were awarded to farmers who had grown, on three acres each, from 87 to 115 bushels of maize, Indian corn, to the acre. In Minnesota prizes were given for 8¼ to 31 tons of potatoes to the acre—300 to 1170 bushels.

At Tomblaine, in France, the 8½ bushels of wheat required for one man's annual food were grown on 47 feet square (2250 sq. ft.), about one-twentieth of an acre. (Major Hallett.)

Labourers and artisans ought to grow, in small gardens, huge crops of potatoes, carrots, beans, onions, peas, and beans.

Another investigator states that 1000 square feet of land (50 × 20) will produce 38 lb. of wheat, 462 lb. of potatoes, or 4000 lb. of bananas, representing one man's food supply for 38 days, 230 days, and 4 years respectively.

The following is derived from the *Clarion* of 11th September 1903 :—

Mr. Vincent, of a hotel at Brighton, works as waiter eighty hours a week. His age is fifty-six. He has been cultivating an allotment since 1893 : three years, 50 rods ; next year, 60 rods ; and since 1897, 80 rods. His chest was very bad, and the doctor's advice made him take to gardening. He cultivates his allotment mostly between 4 a.m. and 8 a.m., when his duties at the hotel begin. From January to September 1903 he put in 660¾ hours at his garden ; roughly, three hours a day. In July he worked 131 hours. "I reckon that a man could cultivate 2 acres, not overwork himself, and make £4 a week." He always watches his vegetables carefully, fills every inch of space with plants, and as soon as one crop is out puts in another. He does not believe in artificial manures or intensive cultivation. The allotments are on the Downs, chalk and stones, not 3 inches of soil. "It took me six months to clear it," now there is a foot of soil without a stone on it. He uses about ten loads of manure, top-dressing, putting manure round the plants as they grow, digging it in after the crops are taken up. "We have water laid on, but practically I leave it to the rain." He disposes of his produce to the hotel and to private customers, and never alters his prices,—cauliflowers, 1½d. each always ; peas, 7d. a gallon, even when shops charge 1s. 6d. He charges 2d. for baskets in which he packs 20 lb. of stuff. For 6d. the railway company delivers 25 lb. within 2½ miles of the London station. He paid 25s. for digging last year—all the work is practically done by himself. The soil gets more productive every year ; this year he

expects to clear £80. He takes himself, and gives away, about £10 a year of stuff. The corporation charges at the rate of £4 an acre.

His account stands as follows :—

Revenue.

	£	s.	d.
Asparagus (1s. 6d per 100)	0	8	6
Asparagus kale (2s. 6d. a bus.)	1	19	10
Artichokes (3s. 4d. a bus.)	2	5	5
Broccoli (1½d. each)	4	17	5
Brussels sprouts (5d. a gal.)	2	17	4
Beetroot (1d. and ½d. each)	1	2	4
Broad beans	0	5	0
Cauliflowers (1½d. each)	4	7	10
Cabbages (1d. each)	9	0	10
Carrots (10 for 1d.)	1	14	0
French beans (5d. a gal.)	1	8	7
Flowers	0	18	4
Gooseberries (4d. a qt.)	1	0	0
Lettuce (1d. and ½d.)	7	11	1
Leeks (6d. a doz.)	0	4	8
Marrows (1d. and 1½d. each)	2	0	11
Mushrooms (6d. a lb.)	2	17	4
Mustard (2d. a punnet)	0	17	4
Mint	0	19	6
Peas (7d. a gal.)	4	18	0
Parsley	3	6	4
Potatoes (5d. and 6d. a gal.)	1	14	10
Plants	0	1	0
Red currants (1s. 6d. a gal.)	0	16	6
Radishes (36 for 1d.)	0	10	6
Rhubarb (6 sticks 1d.)	0	17	11
Stones (2 loads)	0	5	0
Spinach (5d. a gal.)	2	11	0
Sea-kale	2	0	11
Sage	0	12	3
Turnips (5d. a gal.)	0	5	11
Thyme (3d. a bunch)	0	4	7
	£66	2	11

Expenditure.

Rent and Water	£2	6	4
Manure	2	18	3
Seeds	2	3	4
Wheelbarrow	0	9	6
Garden boots	0	10	6
	£8	7	11

Profit, £57, 15s. 0d.

Mr. Vincent started without knowledge of gardening and had no greenhouse.

Vigour and Frugality.

Mr. George Jacob Holyoake wrote as follows in the *Co-operative News*:—Mr. Henry Pitman was, as he ever has been since congresses began, at the reporter's table, radiant, though it takes less to keep him alive than any one I know save Cardinal Manning. As the French say, "Long live Vegetarianism!" Referring to Mr. Axon, "Are we to conclude," says Mr. Holyoake, "that the cereal mind is brighter than the bovine?"

Charles Kingsley, in *Alton Locke*, referring to Crossthwaite the Chartist, wrote: "He was not only a water-drinker, but a strict vegetarian also, to which, perhaps, he owed a great deal of the almost preternatural clearness, volubility, and sensitiveness of his mind."

General Booth is described by a great journalist as "one of the most inspiring teachers of our time"; "in old age the same lithe, fiery, untrammelled, and restless spirit of his youth"; "a living example of the gospel of simplicity, purity, sanctity, sobriety."

In *The Stark-Munro Letters*, one of Dr. Conan Doyle's characters says: "I was able to recommend vegetarianism, which I have found to act as a charm in such cases" (epilepsy).

Mr. Miles won the Final Tennis M.C.C. Challenge Prize in 1903, of which he was already a holder, being proved, according to a newspaper account, "far and away the best amateur tennis and racquet player in the world."

Food Value of Vegetable Albumen.

Dr. Rutgers' experiments on himself and his wife, the results of which were published in Dr. Voit's *Zeitschrift für Biologie*, showed that vegetable albumen, weight for weight, is equivalent to animal albumen, the nitrogenous balance between income and output being equal, and health maintained.

Peas and beans, however, were found to produce some discomfort. Acidity was less on the vegetable than on the mixed diet.[12]

The Value of Lentils.

In a letter to the *Times* some twenty-five years ago Mr. W. Stevens, Superintendent of the Ham-yard Soup Kitchen, W., described lentils as "undoubtedly the very best ingredient for soup," and similar testimony was given before the Physical Deterioration Committee. Still further back, about 1860, Mr. S. G. Young, of the Council of Education, said: "Lentils are much too nutritious to be eaten unmixed with other foods; they are among the richest known of vegetable substances used as food." Analysis of

1 lb. of lentil seed gave: Water, 2 oz. 105 grs.; casein, 4 oz. 70 grs.; starch, 5 oz. 262 grs.; sugar, 140 grs.; fat, 1 oz. 153 grs.; mineral matter, 105 grs.

Prevention of Colds.

The following appeared in the *Practitioner*[13]: A woman who for years suffered from violent colds, sometimes very serious, has obtained immunity by attention to diet, and especially by drinking water copiously, and the use of a rough horse brush for the skin, according to the advice of a New York physician. "Whenever you eat a heavy, rich dinner—and let it be as seldom as possible,—omit the next meal, and substitute a quart of water. You can't take cold unless you get into a condition for it." Water taken with meals, says the *Practitioner*, does not count at all; it is rather to be added to the side of the enemy. It must be taken before breakfast, and again just before retiring; a quart should be sipped during three-quarters of an hour.

Vegetarian Diet for Alcoholics.

The warden of the Female Inebriates' Home, which has been already noticed, has informed Mr. H. Cocking that "since adopting this diet" the women (in bad cases) "are up and about in less than a fortnight," much less than the time previously required. "I receive women of all ages, from twenty up to seventy-six, and in no instance has it failed to suit them"—(A lady, who has kept a large staff of servants, to her kitchenmaid).

On this matter the opinion of an American paper, the *Pathfinder*, of Los Angelos, may be quoted:

"With the elimination of meat [from the system] . . . the desire for other forms of dissipation is removed. . . . We regard meat-eating as the most dangerous habit that to-day affects the race. . . . We know that the moral tone of every individual is lifted fully 75 per cent. when once meat is eliminated."

Alcohol undermining Health.

In speaking of the action of alcohol as a producer of disease, Sir Andrew Clark, senior physician to the London Hospital, declared that certainly more than three-fourths of the disorders in what we call "fashionable life" arise from the use of this drug. "Perhaps the greater mass of the disorders, as distinct from the diseases, with which mankind is afflicted, arise from the abuse of this drug." "It is the frequent or habitual use of beer, etc., in small or moderate quantities, and not the occasional bout of heavy drinking, which does the harm." "Day by day . . . this little excess is doing its work. It upsets the stomach, the stomach upsets the other organs, and bit by bit, under this fair and genial and jovial outside, the constitution is being sapped," and then, suddenly, comes the severe and dangerous illness.

Importance of Oil.

Dr. G. Black says that vegetarians generally make the mistake of ignoring the importance of fats and oils in their dietary. Pine kernels, Brazil nuts, or a spoonful or two of pure olive or nut oil each day would do much to keep the body warm and healthy in cold weather.

Causes of Cancer and Insanity in India.

According to the *Encyclopædia Britannica*, there were, about 1881, 240,042 Christians and 171,542 Mohammedans in Ceylon. In 1901 there were 2,075,000 Buddhists, 360,000 Christians, 900,000 Hindus, 240,000 Mohammedans. Coffee was grown to a large and increasing extent between 1850 and 1873. The cultivation of tea and cocoa has taken its place.

The palm-fruit furnishes the native with food, drink, and other materials. The chief staple of Ceylon is rice.

[The West Province includes Colombo. The South includes Galle. The Central seems wild and hilly. The North-West, the East, the North, and North Central, and Uva and Sabaragamuwa seem to be little Europeanised.]

Sir Samuel Baker says in *Eight Years in Ceylon*, that the natives chew betel-nut (areca) composition continually, from which they are afflicted with cancer in the cheek; also, they use largely the following stimulants and narcotics—arrack, tobacco, fungi, and Indian hemp. Hemp is still more used by the Malabars.

In that part of the recent Judicial Statistics of British India [14] which deals with asylums for the insane (1902 and preceding years), it appears that the causes of insanity were, on an average for five years (1887-91), for each year :—

Hemp habit . .	860 (about)
Opium . .	38
Alcohol . .	188

For the five years, 1898-1902 :—

Hemp . . .	670 (about)
Eating opium . .	26
Smoking opium .	7
Alcoholism . .	150

Of all the *known* causes, hemp was by far the most effective, largely exceeding even heredity.

Cancer in American Towns.

The *British American Journal* states[15] that carefully compiled statistics show an increase of cancer in the last forty years in—

Boston, of.	.	28	to 85	deaths per 100,000
San Francisco	.	16·5	to 103·6	,,
New York	.	32	to 66	,,
Philadelphia	.	34	to 70	,,
Baltimore .	.	18	to 63	,,
New Orleans	.	15	to 82	,,

Foul Flesh for Food.

In the course of a discussion on the meat supply,[16] Dr. Armstrong, of Newcastle-on-Tyne, said that foreign meat was sent to us in varying conditions; it was sheeted, and inspection was difficult. "Offal comes in boxes." Dr. Bond, of Holborn, said a very large amount of diseased meat was brought into London, quite unfit for food.

Dr. Alexander Marsden, Chairman of the Cancer Hospital, London, stated in a letter to a newspaper (5th March 1901), that the first step urgently required to arrest the increase of cancer is to stop the sale of

diseased meat and other pernicious foods. Carcasses affected with "anthrax, foot and mouth disease, tuberculosis, etc., are dressed up" for the market, and pass undiscovered. The same dangerous practice is known also in the Colonies.

On 6th December 1904, Dr. Collingridge, M.O.H. to the city of London, told the presiding Alderman at the Guildhall that certain quarters of beef seized were cancerous; and that beef containing sarcoma is the most dangerous food imaginable.

A very large percentage of the cattle killed for food are tuberculous. Much tuberculous meat is made into sausages, etc.; much foul meat is insufficiently cooked. Often the interior of a large joint of meat does not reach, during cooking, the temperature fatal to bacilli.

Colonel J. Lane Notter said that the Report of the Royal Commission clearly indicated that the danger [from tuberculous animals] is a real one, especially with regard to the meat of tuberculous bovines.

The putrescent state of meat from healthy animals, besides the meat of diseased animals, may produce meat poisoning.

"No doubt the flesh [of the pig] is affected by the unwholesome garbage on which the pig feeds."

The pig is attacked by anthrax, tuberculosis, muco-enteritis, hog-cholera, trichina, and other parasites.

Decomposing flesh may cause vomiting, diarrhœa, and great depression.

Professor W. Hunting said that the meat of dead or dying animals and diseased animals is sent up to London for the food of its people.

"Probably the most dangerous and offensive meat is used only for manufacture into prepared foods."

Dr. T. W. Hime said that "the pig, as a rule, gets nothing but food of the most stinking character."

Genesis of Cancer.

In the article on the work and discoveries of the Cancer Research Committee, already quoted (p. 460), the writer states that Professor Farmer and his colleagues have found that cancer cells split up to form new cells after the manner of reproductive tissue. Growths occur on plants which are cancerous in destructiveness. "Some kind of irritating stimulus applied to the plant's tissues will produce them. The birth of cancer consists in the application of some kind of irritating stimulus to the ordinary cells." Dr. Bashford and Dr. Murray have succeeded in grafting cancer into animals of the same species.

Dr. Robert Bell believes that the falling away of health, which gives opportunity for the development of cancer, is due chiefly to vitiation of the blood, and that the prime factor in this is the overtaxing of the digesting and assimilating organs, especially by an excess of animal food. Those persons who eat least flesh of domestic animals are, as a rule, the healthiest. Much of the excessive flesh eaten is not digested, but decomposed, forming enterotoxins, and vitiating the blood. With constipation, there is much absorption of fetid matter. Dr. Bell, further on in his pamphlet, relates that a journeyman butcher stated his opinion that 60 per cent. of stall-fed cattle have cancerous livers. The meat of cattle thus horribly diseased is sent to London, minus the incriminating portions.

The Productiveness of the Earth.

The same space of earth used for banana culture gives a hundred and thirty-three times the food-production of wheat, and forty-four times the food of potato. The same ground gives 33 lb. of wheat, 99 lb. of potatoes, 4000 lb. of bananas. The banana is much more nutritive than the potato. It can with advantage be used in the form of flour.[17]

Cost of Transport in England.

Mr. R. J. Dyson-Deverell writes:[18]—

A ton of apples, Folkestone to London, costs	£1	4	1
,, ,, California ,, ,,	0	15	8
,, British meat, Liverpool to London	2	0	0
,, Foreign meat	1	5	0
,, eggs, Galloway to London	4	14	0
,, ,, Denmark	1	4	0
,, ,, Russia	1	2	0
,, ,, Normandy	0	16	8
,, plums, apples, or pears, Queenborough to London	1	5	0
,, ,, ,, Flushing to London	0	12	6
English pianos, Liverpool to London	3	10	0
Foreign Pianos	1	5	0
Nails, wires, tubes, Birmingham to London	0	10	9
,, ,, ,, Germany	0	4	9
English spades	1	1	9
German	0	6	6
Iron ore and steel rails charged per ton on American railways	0	6	3
Iron ore and steel rails charged per ton on English railways	1	9	3

Oppidanism.

Mr. Rees' Evidence, Inter-Departmental Committee on Physical Training.—Ayrshire rurals are, according

to the British Association Report, 4·15 in. taller and 36 lb. heavier than the natives of Glasgow. The men of Exeter are 1½ in. shorter and 15 lb. lighter than the neighbouring men of South Devon. Natives of Newcastle in the militia average 5 ft. 6·2 in., of Alnwick and Morpeth 5 ft. 7·19 in., of the country round 5 ft. 8½ to 5 ft. 10 in., according to Dr. Beddoe. The cutlers of Sheffield, the men of Bristol, are below the average of the neighbourhood. Flamborough fishers, according to the British Association Report, are 2·9 in. taller and 24·3 lb. heavier than the artisans of Sheffield.

Still births, by the Registrar-General's reports, have increased 300 per cent. in the last thirty years, and many more than formerly of the children who survive must be feeble.

Mr. Rees believes that the inhabitants of a well-managed "Garden City" might be positively better, physically, than the inhabitants of the country.

The Young Generation in Towns.

The recruiting officers of Manchester say that the contrast between the young men who come from the country and those who come from the crowded districts of Manchester is alarming. These last "come to us with their fingers stained with cigarettes, and nearly all of them suffering from palpitation of the heart." At eighteen the chest measurement is only 28 or 29 inches.

"There is no more serious question before the nation."

Hygiene in Schools.

The British Association for the Advancement of Science appointed in 1902 a committee to report "on the conditions of health essential to the carrying on of the work of instruction in schools."

The committee advised that the Education Department should adopt or recognise some more thorough and practical test of a teacher's knowledge and experience of the application of health conditions in school life. The health conditions were the following :—

(1) Bodily nourishment ; (2) Clothing ; (3) Housing in schools ; (4) The working of the bodily functions and organs of sense ; (5) Physical exercise ; (6) Times to work and rest, including length of lessons and holidays ; (7) Healthy tone of mind and morals ; (8) Preventive and precautionary measures against infectious diseases.

The Memorial, with Scheme, signed in 1904 by over 14,000 medical men in favour of the teaching of hygiene, including the value of foods, has not received nearly as much attention as it deserves. It is a most admirable document.

The Decline of the Birth-Rate.

In England, according to Mr. Havelock Ellis, the decline of the birth-rate has been, since 1876, 20 per cent. of the population, and in some of the large towns 40 per cent. In the seventeenth century the average number of children was nearly 7, at the end of the eighteenth over 6, early in the nineteenth between 4 and 5, late in the nineteenth below 4, and in parts only a little over 1. The birth-rate of Anglo-Saxon

Canada is low, of Australia very low, and of New Zealand low and falling.[19] Meanwhile the Dutch of the lonely veldt, and the French Canadians, have families of 4 to 18. We win territory, but lose our race.

Abstinence and Endurance.

Major Skinner, during his great engineering campaign in the interior of Ceylon, lived out of doors, his only shelter being a leaf tent, and his only food for two months being rice, roots, five small chickens, a square inch of fish at each meal, a small cup of coffee, rice-flour cake and biscuit, and a little cold tea or a glass of sherry and water. "This régime," he says, "brought me into such splendid condition that I could outrun anyone. I could leave all the athletes of the village behind me." His working staff consisted of African soldiers, "the hardiest in the British army." They had savoury meals, salt beef, pork, rice, curry, arrack. Every man except himself was laid up. Before the close of the season Major Skinner suffered severely from sore legs, apparently the result of hardships. Three thousand miles of made roads, and many other works, testified to the value of his fifty years of incessant work.[20]

Motive.

It has been said of St. Francis, that not only was every man his brother, but every animal,—the sheep in the fields, the birds in the branches, the ass on which he rode, the bees who took refuge in his kind protection. He was the friend of everything that suffered or rejoiced—his heart rose to see the gladness

of nature, and melted over the distresses of his fellow-creatures. And by this divine right of nature, everything trusted in him.[21]

Shelley in this was like him. "For I loved all things with intense devotion." And he wished men and women to work on equal terms for the highest good. "Never will peace and human nature meet," till man and woman are free and equal in religious aspiration.

Improved Infant Feeding.

The Babies' Hospital in London, according to an article by Miss Elliston in *The Daily Paper* of 5th February 1904, obtains milk from a farm where the cows and dairymen are clothed with sterilised material, where the pails and milking-stools are sterilised, and where the milk is filtered through sterilised cotton wool, cooled down to 40 degrees, and separated into various proportions and strengths. The bottles are sent in refrigerators, and the mouthpieces covered with sterilised material. Each baby is fed with its particular milk at the proper temperature.

Appendicitis.

Professor Lefèvre looks upon appendicitis as a result of improper feeding—rich fare, including oysters, crabs, fish, fowls, red meat, wines, coffee, and liqueurs. Sir Frederick Treves attributes the disease to hurried meals and indigestible food, such as pine-apple, ginger, nuts, tough meat, lobster, etc.

An inquiry recently made in France showed that

appendicitis prevails much more among the troops stationed in France than in Algeria, and more among the troops than among the natives in Algiers. M. Chauvel ascribes the immunity of these to greater sobriety and vegetarian diet.

Korean and Chinese Recoveries.

Dr. Hugh Weir wrote in the *British Medical Journal* for 4th June 1904 of the Koreans as remarkably free from high arterial tension and from constipation. He had seen more than a thousand patients, and was struck by the absence of this trouble. "Animal food is very little used by Koreans" [of the poorer classes]. Their staple is rice.

Mrs. Earle tells of an interesting experience of an Englishman in China who astonished his doctor by a very rapid recovery from dysentery through refusing beef-tea, medicines, etc., and living on milk and white of egg, and afterwards chiefly on bread. The doctor had long wondered why the Chinese got well so quickly, and supposed it might be "because they never eat meat."

Patent and Natural Foods.

The *Lancet* of 5th July 1902 contains an address by Dr. R. Hutchison, in which he states that natural are in general superior to patent foods. Thus butter and cream are better than cod-liver oil, and cheaper; beef extracts have little value as foods (vejos, a vegetable extract, appears to be more nutritious); and it is vastly more expensive to rear a child on extracts and

artificial products. Of the whole range of artificial foods Dr. Hutchison most commends those derived from milk, such as plasmon and casumen. These contain eighty to ninety per cent. of pure proteid. But is it desirable for healthy people to take their meals in so concentrated a form?

Juvenile Crime and Heredity.

There is a growing precocity in crime.

From 1884 to 1898 nearly 1000 Prussian children killed themselves between ten and fifteen.

The increased criminality of the young in France has already been noticed in the Introduction. Among nearly 15,000 inmates of reformatories in the United States, more than 9000 were between twelve and sixteen.

The sixth generation of a certain family was estimated to consist of about 5000 persons. Of these, 1750 were traced. Their percentage of crime, pauperism, and disease was astounding. They filled thousands of pages in the records of charitable societies, and were well known to the police in every district where they were found.

The examination system has been called the curse of modern education. One observer states that three out of four children lose weight during examination. The effect is often that of a grave disease disturbing nutrition and brain.[22]

It seems to be time for education to make a new departure. Among the means of reducing the diseased brain development of children, there can, I think, be no doubt that better food, physical and manual

training, ethical teaching, and physiological care are important.

An Illustration.

A child, who had been to the field to feed and fondle his pet lambs, entered the kitchen to return a plate. The cook was not there. On the table was an open book. The child read what was before him: "*Sheep's head.* Clean the head (split in half), take out the eyes, remove the tongue, remove also the gums and teeth and nostrils, and leave in a pan of warm water, with half a cup of vinegar on it, for an hour. . . . Serve with melted butter, and the brain, which should be boiled separately, chopped small, together with some parsley."

The child read no more in that book, but flew to the sunny woods, and sobbed aloud to Nature.

But these recipes are to be found calmly recorded by a Christian for Christians: "Buy the lobsters alive, and choose those that are heavy and full of motion. . . . Have ready a stewpan of boiling water, put in the lobster [and hear it scream], and keep it boiling quickly."

"Put the pig into cold water directly it is killed. . . . Make a slit down the belly, take out the entrails, well clean the nostrils and ears. . . . Take off the feet, and loosen and leave sufficient skin to turn neatly over."

Let us rush to an antidote against the foul taste that these devilries leave behind.

William Cowper wrote concerning his tame hare—

"Yes, thou may'st eat thy bread, and lick the hand
That feeds thee; thou may'st frolic on the floor
At evening, and at night retire secure
To thy straw couch, and slumber unalarmed:
For I have gained thy confidence, have pledged
All that is human in me to protect
Thine unsuspecting gratitude and love."

And William Watson on the cosmic unity:

"For lo! creation's self is one great choir;
And what is Nature's order but the rhyme
Whereto in holiest unanimity
All things with all things move unfalteringly,
Infolded and communal from their prime?"

And—

"In faultless rhythm the ocean rolls,
A rapturous silence thrills the skies;
And on this earth are lovely souls
That softly look with aidful eyes.
Though dark, O God, Thy course and track,
I think Thou must at least have meant
That nought that lives should wholly lack
The things that are more excellent."

The only possible happiness of mankind will be in harmony with the spirit of humanity, the Soul of all souls, the Life of life.

CHAPTER XV

Conclusion

In the Introduction to this volume a general statement was made of the case for a consideration of the question of food in modern conditions of civilisation, in view of the perils, not only to health, but to the very existence of a great nation.

Decay was proved to follow the congestion of multitudes of people in the closely built streets of towns with impure air, ill-nourishing or improper food and drink, and other elements making for demoralisation.

The high death-rate of infants, the bad health of children, and the rapidly diminishing birth-rate of the British race were noted; also the increase of nervous diseases, insanity, suicides, child criminality, and the many disorders due to dyspepsia and alcoholism among both men and women.

The absence of the required space and gardens for every family in towns, and the extirpation by antiquated land laws of the rural population, were regarded as amongst the most serious prime causes of degeneration. The expulsion of the people from the country is followed by the extinction of much of the best stock of the British race.

In the First chapter the opinions of the greatest

physiologists were shown to be favourable to food derived from plants rather than the bodies of beasts for human sustenance. And the natural repulsion to murderous acts and to carnivorous eating was illustrated by the experience of children, and the feelings expressed by poets and other humane writers.

In the Second chapter some account was given of the calculated and theoretic physiological value of various foods.

In the Third the full equality and even superiority of herbivora and frugivora to carnivora was shown in strength, sagacity, and endurance, both as individuals and as tribes.

In the Fourth and Fifth chapters some particulars were given of the physical and moral prosperity of people who lived on the products of plants in earlier periods of the world's history.

In the Sixth chapter the diet of races and nations in recent times were set forth and on a summary it was computed that on the whole those which derived their chief nutriment from plants were decidedly the strongest.

The Seventh chapter showed how well communities and armies have thriven on simple fare.

The Eighth chapter comprehended a long chain of evidence from personal experience of the value of frugal living to body and mind.

The Ninth chapter contained a mass of medical opinions and experiences to the same effect.

The Tenth chapter dealt with the baneful influence, on persons and on the race, of stimulants and narcotics habitually used as food and drink.

The Eleventh chapter alluded to the prevalence of a

very large amount of disease, including insanity, due to the increased misuse and excess of food, and dealt particularly with the question of the growth of cancer.

The Twelfth chapter gave a short account of remarkable successes in athletics gained by vegetarians or by persons trained on a "natural" diet.

The Thirteenth chapter exhibited the exceedingly wide practice of adulteration in food and drink, to the great loss of the mass of consumers in the grip of a dishonest civilisation.

The Fourteenth chapter added some further supplementary information, including recent discoveries of considerable theoretic interest and great practical value arrived at by a course of strict experimental investigation.

The whole trend of the inquiry with which I have dealt leads, in my view, to a very sure conviction that science, humanity, hygiene, patriotism, consideration for the poor, religious consistency, and the sense of joy in beauty, the harmony with the "choir invisible" which gives zest and value to life, agree in commending simplicity in diet and abstinence from a share in cruelty and slaughter.

Most of those few among Western nations who have fairly tried the frugal diet can hardly look without horror upon the bloody corpses hanging out in the streets, and would loathe a return to the customary feasting upon the limbs and organs of their animal friends. The whole business becomes sickening to their senses, to their intelligence, and to their hearts.

There are four main elements of national strength by which a race is able not only to thrive but to endure for ages. These are religion, country life, or a

fair distribution of land,[1] the sacredness of the family, and εὐφροσυνη, sobriety, or reasonable restraint of ambition; but these may indeed be comprehended with all else that is excellent under the one title of religion understood as practical devotion to the ideal good of humanity.

Christ said: "By this shall all men know that ye are My disciples, that ye love another"; and Gotama: "Self-control and love, tender regard and exalted spiritual love for others, reverence, lowliness, diligence, . . . overcoming the evil by good, . . . goodwill without measure toward the whole world, holiness, eventual sinlessness, and eternal peace; . . . this state of heart is the best in the world."

Now it is quite clear that this teaching is to a very great extent flouted and abhorred in social affairs, in trade, in politics, in the daily life of millions of Christians who regularly attend their church or chapel, as much as by millions who profess no religion at all.

When we see that most owners of land have rendered it impossible for their fellow-countrymen to live securely, or under fair terms, on the land over which these owners are for the moment holding an intrusted power; when they do in effect make the country barren of humanity, which ought to be thickly covered with gardened villages and joyous homes; and drive the peasantry into the masses of the towns, to ruin and decay; when we see traders, regardless of the lives and health of their neighbours, ready to use false weights, false measures, adulterated and even poisoned goods; when even the milk on which the lives of children depend can hardly be obtained of good quality; when the richer people of Europe and America spend on harmful excess more than sufficient to keep in spacious

comfort the toilers from whom all wealth is derived; when we see Parliaments careless to spend five minutes in hearing of the plagues and famines of multitudes of suffering cultivators, and eager to crowd and crane in listening to small personalities, however long drawn out; when, in the streets and theatres and restaurants and churches we see a profligacy of luxurious dresses and ornaments, a barbarous pride in fashion; when we see cruelty in greed far exceeding that of a beast of prey; when we see nations, on false pretences and as a result of the popular perversion by innumerable channels of governing mendacity, committing great crimes—burglaries, murders, and oppression,—there can be no doubt that religion as a vital principle has little honour, or that faith, as when Christ spoke, scarcely comes to as much as a grain of seed here and there in the season that should be harvest.

Barbarities and blind selfishness are not confined to one class; they pervade the material of the nations whose "wealth accumulates while men decay."

In the Report by the Committee on Intemperance for the Lower House of Convocation of the Province of Canterbury, the testimony of the governors and chaplains of workhouses was that 70 to 80 per cent. of the inmates became paupers through drink.

The curve of apprehensions for crime follows closely the curve for alcoholic expenditure. Too often high wages, which ought to be used for private and public benefit, increase the sum of misery and criminality.

Nations are not ruined by poverty, but by money outweighing their capacity or will-power and blinding their discretion.

At the same time, with increase of luxury comes

the decline of the family, the fall of the birth-rate in centres of wealth and intelligence, and in many cases a neglect of the ancient piety of the home, which is the source of true citizenship.

Disease of body and mind rapidly increase, and threaten the very existence of some of the finest races. We have seen that some of the best native tribes of the world, suddenly touched by the products of civilisation, rapidly destroy themselves; some of the civilised races of Europe have the same tendency, but the process is slower; and they flatter themselves all the time with their advances in mechanical contrivance, art, science, and new cures for new diseases, which ought never to have arisen.

"Look round," exclaimed Dickens, "upon this world of odious sights—millions of immortal creatures have no other world on earth,—at the lightest mention of which humanity revolts, and dainty Delicacy living in the next street stops her ears and lisps, 'I don't believe it!' . . . Then should we stand appalled to know that where we generate disease to strike our children down, there also we breed infancy that knows no innocence, youth without modesty or shame, maturity that is mature in nothing but in suffering and guilt. . . . Oh, for only one night's view of the pale phantoms rising from the scenes of our too long neglect! . . . Bright and blest the morning that should rise on such a night; for men, delayed no more by stumbling-blocks of their own making, would then apply themselves to remedial reform (owning one duty to the father of one family), and make the world a better place."

Much time is lost in discussing whether the race is

degenerating or not. It is sufficient to know that things are exceedingly bad, and require reform all round. It is profitless to be either optimist or pessimist, in the current phrase. It is the duty of every patriot, of every member of the community, to be a meliorist. An immense power of amelioration comes forth from man, when once he determines that he has in himself the control over the future which he anciently ascribed to Providence. "The Word is very nigh to him." Man can himself build up health, and strength, and create peace, and justice, and mercy, and security against enemies, and contentment, by the mind and heart which have been given him. Every talent needs to be pressed into the service of humanity, neither buried in a napkin nor egotistically laid out as a self-cumulative fund.

No more distinct conclusion has been reached by science than this, that the environment has great effect in determining the character and life, that the kindest surroundings will do much for many children far gone in physical decline, and that the race, in right conditions, may recover much lost ground. It is time for us to turn from the improvement of machinery to the improvement of nations.

When the nature of man and conditions of happiness are better understood, the poor animals that have never transgressed the law as we ourselves transgress will be allowed to have claims upon us for fair treatment, and we shall recognise, like some of the most admirable societies now on earth, that we can enjoy their living presence better than their dead bodies, and that no such profession as that of habitual slaughterers is consistent with our better feelings,

complete health, and Christian or human aspirations.

It is in reality a base but unthought-of connivance at a very horrible and revolting business to devour the corpse of the beast, in the rending of which we are too sensitive and refined to take an active part.

When temperance and frugality are accepted as religiously binding, not only for our own selves, but for the sake of regeneration, for the happy life of our children and their descendants, whom we ought to care for, as if beseeching us, untold resources will be set free for the development of productive trades, commerce, agriculture, repatriation on the land, reconstruction of villages, and a thousand amenities hitherto restricted and hindered. Imagine the uplifting of the whole community by getting free from the mass of disease, crime, pauperism, and incapacity, and by the productive use of three hundred millions now annually wasted. Moreover, one may hope that when the smell of the shambles passes away, the whole tone would be raised, the clash of interests less noxious, the display of luxury less repulsive, the common ways more pleasant, and society more fraternal.

We have reason for hope that by a true natural training in all that most concerns the strength of body and mind and heart, and a true ethical religious teaching, or calling forth of qualities on which the conduct of life depends—in short, by a sensible human education, a very great addition may be made to the faculties of the race, resulting in more self-control, a fuller and more joyous existence, and a prospering patriotism, with goodwill towards a friendly world for ages to come.

APPENDIX.

THE following notes may be useful to persons desiring to adopt an improved dietary, with the object of increasing strength or efficiency. A state of apparent health, without full efficiency or full enjoyment of life, is exceedingly common among the over-nourished; on the other hand, the want of health and strength among the ill-nourished is obvious, though often not more serious.

Many nations have the power of very greatly increasing physical and mental power, by far the most important of all forms of energy, by a more scientific treatment of the subject of nutrition in common practice. Of course, everyone must exercise discretion.

Children do well on milk, porridge, good bread and butter; potatoes, or rice, or maize, with refined olive oil; sugar in moderate amount; some fruit and vegetables, and cold water between meals. Each of the following are alone quite sufficient for healthy development, and would maintain the young generation at a high level of strength:—

1. Oatmeal or wheatmeal porridge, milk, sugar, some bread and butter, some vegetables or fruit.

2. Rice, macaroni, or maize, with butter or oil; brown bread, cheese or nuts or almonds, sugar, milk, some green vegetables occasionally, or fruit.

3. Oatmeal, bread and butter, or rice; fish or flesh (a little); milk, sugar, some fruit or nuts occasionally.

As a matter of fact, wholemeal bread or oatmeal porridge, with plenty of milk, is almost alone sufficient for full nourishment. A moderate amount of sugar, and potatoes or green vegetables may be added with advantage in many cases; or else nuts, cheese, almonds, or pine kernels.

All these diets have been proved through many generations adequate and thoroughly wholesome. Of course, many variations of material and of cooking may be made without affecting the value of the alimentation.

For persons over sixteen and under forty-seven, there is a really endless variety of dishes obtainable from plant products, many of them very much more palatable than the ordinary articles of the customary bill of fare. There are hundreds of ways of serving rice, with or without cheese or fruit, in which Italians and Indians are especially skilled. It would be a good thing to introduce whole rice to Europe. There is no better dish than risotto, properly cooked; riz au fromage, and macaroni or spaghetti with grated cheese, and rice with beans or lentils, and wholemeal puddings, with fruit, are good for luncheon or dinner.

The following fare for three meals is sufficient for full sustenance, and better than the ordinary fare for health, but is merely given as an example. The vegetarian dietary is capable of daily variations for an indefinite time when desired, and most guides for cookery only deal with a few of these. (The articles named between parentheses are unnecessary additions.)

Breakfast. — Oatmeal or other porridge. Toast.

Cocoa, or water, or milk with a dash of coffee or tea. (Eggs or fruit. Pine kernels or almonds. Marmalade or apple jelly. Various fancy breads. Fish.)

Luncheon or Dinner.—Lentil, pea, bean, celery, or potato soup. Spaghetti or macaroni au gratin, or risotto with grated cheese or lentil sauce, or rice with tomatoes, or semolina, or batter, or Yorkshire pudding, or polenta with olive oil, or savouries of some pulse and vegetables and herbs, or potatoes roasted, steamed, fried, or creamy, with sauce, or baked beans with tomato sauce, or pie of vegetables (Irish stew) with wholemeal crust, or melted cheese on toast (Welsh rarebit), bread and raisin pudding, or rice in some form, or any plain or sweet pudding, or stewed apples, prunes, figs, pears, apricots, plums, peaches, blackberries, cherries, strawberries, raspberries, gooseberries, greengages. Fancy breads, rusks, biscuits, nuts, almonds, raisins.

Dinner or Supper.—Some of the lighter articles of the above; some savoury dish or pudding, or else wholemeal bread or toast and butter, vegetables, thin cocoa or lime juice or water. If this is the principal meal of the day, it may approximate to that given for luncheon.

Either plenty of porridge and milk, or else wholemeal bread, or some cheese, almonds, nuts, or other proteid or plasmon food should be brought into every day. Lentils, beans, and peas are highly nourishing, but should be used sparingly, and not at all by the gouty or those affected by uric acid.

A medical authority advises, for dyspeptic people: proper intervals between meals (this is always obligatory), avoidance of hurry, and of exertion immedi-

ately before or after meals; stale bread, toast, rusk; very young peas or beans, broccoli, cauliflower, Brussels sprouts, celery, endive, lettuce, well boiled; purée of vegetables; roast apples; milk; whiting, sole, flounder, haddock, plaice, brill; poultry, boiled or roast; mutton; lightly boiled eggs may be tried; no pastry, batter, cream, soups, tea, coffee. Thin cocoa or cocoa-nibs is allowed. For constipation, fresh fruit and vegetables, wholemeal bread and porridge, oils, fats, cream, butter; thin coffee or cocoa.

Solid five o'clock tea, and other between-meals are utterly condemned by doctors.

Some excellent partly cooked foods have been introduced in recent years, which are of much service to the dyspeptic, and indeed to all busy people who are not living an outdoor life. The main cure is to stick to a few simple dishes, to avoid stimulants and narcotics, and to drink water either hot or cold. For everybody it is a mistake and wasteful of energy to drink at meals; the time for drinking is about three or four hours after or one hour before.

For persons above forty-seven, it is of the greatest importance to reduce the bulk and richness of meals considerably, with the object of avoiding indigestion, nervous breakdowns, or other troubles, and of favouring efficiency for the future. Some find much advantage not only in reducing their diet at meals, but in cutting out one meal altogether. It is quite certain that many old people live much more happily on less than half their previous fare.

Probably the best plan is to make a light repast in the morning and evening, and a larger one between one and three.

To promote sleep, a little porridge with milk or cream for supper is excellent, and, of course, coffee and tea should be wholly given up; this may easily be done, without headaches, by gradually reducing the strength and substituting hot water or thin cocoa for the stimulants. A well-chosen vegetarian way of living has a really wonderful effect after a year or two in reducing the severity and frequency of colds, and in dissipating common ailments. This I know from my own experience and observation. On the other hand, the habitual cough perpetually heard in hotels and clubs is an expression of physiological discontent with a very different régime.

Further particulars of diet for the utmost bodily and mental efficiency may be found in the details of habitual national fare (such as the Japanese) and in the medical recommendations given in this book. But a great deal of wisdom may be summed up by saying that with simple fare and good cooking nearly every one will find himself able to enjoy life, and dismiss the subject from his thoughts with pleasure.

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CHAPTER XV

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Printed by
MORRISON AND GIBB LIMITED,
Edinburgh.