

CURTIS
ON
HEALTH.

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MR. WEST AND FAMILY.

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OBSERVATIONS
ON THE
PRESERVATION OF HEALTH,

IN

Infancy, Youth, Manhood, and Age :

WITH

THE BEST MEANS OF IMPROVING THE MORAL AND
PHYSICAL CONDITION OF MAN.

Δόγω ἡγεμόνι ἐν παντὶ χρώμενος οὐκ ἁμαρτήσσει

BY

JOHN HARRISON CURTIS, Esq.

AUTHOR OF "OBSERVATIONS ON THE PRESERVATION OF SIGHT," "ON THE
PRESERVATION OF HEARING," ETC. ETC.

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P R E F A C E.

THE popularity of my two small works on the Preservation of Hearing and Sight, has led me to believe that a book on the Preservation of Health, written on the same plan, would probably be useful to that large class of the community, the members of which, having neither the leisure, the inclination, nor the pecuniary means of becoming acquainted with more voluminous and scientific treatises, are yet, doubtless, as much interested in the subject, and as desirous of information upon it, as persons more favourably circumstanced.

I am aware that many excellent and useful works have lately been published on this point; which have, I trust, effected much good, by directing the attention of the public to a matter of first-rate importance, previously but little attended to. Yet I think it cannot be denied, that the size and price of these books have excluded many persons from participating in the advantages they are capable of conferring: and it is to be feared that the same effect has been produced by their profoundly scientific nature; a quality which, however admirable

in itself, unfits works possessing it for very extensive circulation; and hence, while man is continually extending his dominion more widely over animate and inanimate nature, and reducing the most intractable elements into the subservient agents of his will — of his own nature and constitution — of that which most nearly concerns himself — he remains in comparative ignorance; and consequently he, the controller of the elements, is their sport also.

For the purpose of diffusing knowledge among every class of society on the subject of health, I have penned the following pages; in which my object has been, not to start original speculations, nor to attempt to enlarge the boundaries of science, but to present to the reader a simple statement of those anatomical and physiological facts, from which may be derived a body of rules for his guidance in relation to those circumstances of every-day life which exert the greatest influence upon the health; and which rules it has been my endeavour to set before him as *necessarily resulting from the constitution of his frame*. By pursuing this plan I hope I have avoided, on the one hand, the tedious and generally uninteresting details of science, and, on the other, that dogmatism and appearance of superficiality, which cannot but detract much from the influence of rules upon the conduct of those to whom they are addressed.

Long-recognised principles become truisms; but, as such, instead of being disregarded, they should be the

more highly valued. In the present advanced state of physiological knowledge there is little left to the writer on this subject, but to shew the practical application of these truisms to the actual state of society, and how their tendency may be most beneficially worked out for mankind at large. This I have endeavoured to accomplish ; with what success, it is not for me to say. It has been my object to compress into a small compass the wisdom of past ages, with the improvements and discoveries of contemporaries ; nor, when my purpose has been answered by it, have I disdained to make use of the valuable information contained in the writings of others, and to record my obligations to many distinguished contemporaries.

The subject of this book—I repeat it—is the preservation of health, not the cure of disease. Its chief aim is to furnish practical directions for that purpose, in relation to the four states of man—Infancy, Youth, Manhood, and Senility, so beautifully shadowed out in the physical world in the successive seasons of Spring, Summer, Autumn, and Winter. These rules are so simple, that no one, who pays the least attention, can misunderstand them ; and I am persuaded that if they were systematically and rationally observed, they would tend greatly to prolong life, and to increase the capability of enjoyment.

A prejudice still exists, though far less general now than it was a few years ago, against the study of works on health ; from which many evils are asserted to arise,

and no counterbalancing good results. The persons who entertain this prejudice appear to think that instinct, (which, in their vocabulary, goes by the name of "common sense,") however confessedly insufficient for other purposes, is quite capable of guiding them aright in respect to the health of themselves and children, which they maintain would not be at all improved by attention to rules on nursing, diet, exercise, &c. &c. If such individuals would but reflect on these opinions, and examine the validity of the arguments by which they are supported, they would soon, I think, be compelled to acknowledge their error.

The functions of the body are so closely connected with the operations and feelings of the mind, that it may safely be asserted that a healthy community alone can be a virtuous, and therefore a happy one. The chronicles of the crimes of every country furnish abundant evidence of how great a mass of wickedness has been occasioned by the exacerbation of disease. This is a feature of my subject too little insisted upon, and perhaps not sufficiently understood. I know that by teaching men how to live healthily, I am, at the same time, inculcating upon them the principles of morality; and this conviction has sanctified my labours, and will ever be to me a source of elevated satisfaction.

I have, in this book, made a few observations on the influence of some of the professions upon the health; and it is my intention to enlarge upon this subject, as

well as upon the effect of various trades, in a separate work, as soon as I have completed my publications on the Ear and Eye.

This volume is of the same size as my two small works on Hearing and Sight ; so that those who possess them can, if they wish, bind it up with those works.

JOHN HARRISON CURTIS.

2 SOHO SQUARE,
April 20, 1837.

INDEX.

- ABERNETHY, Mr., quoted, 77, 79.
- Abstinence — often too prolonged, 59.
- Acoustic instruments — some remarks on, 105.
- Agesilaus, 4.
- Air — its effect upon the blood, 18. Importance of breathing fresh air, 19. Evils resulting from breathing impure air, 20. Exemplified in an incident in the life of Crabbe, &c. *ib.* Necessity for an abundant supply of fresh air for the aged, 112, 113.
- Andral, 81, 84.
- Appetite — the best guide as to the quantity of, and the times of taking food, 46. The terms “healthy and unhealthy,” as applied to appetite, explained, *ib.* Perverted by excess of food, 47.
- Asclepiades, 4.
- Bagster, Miss — her case quoted, as an example of the effects of great mental dependence and inaction, 82.
- Ballingall’s (Sir George) work on Military Surgery referred to, 78.
- Barristers, 72.
- Bathing, 13. Tepid bathing the best for the purposes of cleanliness, *ib.* Bathing in cold water sometimes fatal to infants, *ib.* 14, 15. But beneficial, when indulged in with due precaution, to youth of both sexes, 49.
- Baths, 50. Highly useful to the aged, 112. Precautions to be attended to by them in the use of the bath, 113.
- Beaumont, Dr. — an account of some of his discoveries respecting digestion, 42.
- Bed-curtains — the use of reprobated, 22. Chambers — observations respecting, 22, 23.
- Bichât quoted, 35.
- Blood — an account of the, 16, 17. Blood-vessels, 17.
- Boarding-schools, 45, 52, 53.

- Bones — account of their structure and uses, 25.
- Brain — functions of the, 33, 34, 77. Brain of infants, 36. The principal source of the nervous fluid, 77. Its intimate connexion with the stomach; consequences of this connexion, 78, 79.
- Breakfast, 60.
- Brigham, Dr. — his work on Mental Excitement referred to and quoted, 34, 36.
- Broths, not sufficiently nourishing for the young, 45. How they may be best taken, 57.
- Caldwell, Dr. referred to, 52. Quoted, 103.
- Capillary vessels, 17.
- Carbon — the principal impurity of venous blood, 19. Its combination with the oxygen of the air forms carbonic acid gas, *ib.* Deleterious nature of carbonic gas, 18, 19.
- Charlotte, Queen, 54.
- Cheerfulness, conducive to health, 53, 80, 90. Its beneficial influence exemplified in the French army after the battle of Austerlitz, 78.
- Children — general principles for training, 32.
- Cicero, 115.
- Clarke, Dr. Adam — his character as a boy, 39.
- Cleanliness — importance of, 12, 13, 67, 112.
- Clerks — remarks on muscular exercise, &c. in relation to, 68, 69, 70. Advice to them as to seats, desks, stoves, &c. 72.
- Clothing — necessity for cleanliness in, 13. Should fit the body loosely, *ib.* Should be varied with the seasons, *ib.* Evils arising from the neglect of this rule, 16. Tight clothing reprobated, 50, 114.
- Club-houses — remarks on, 22.
- Coffee — a stimulant; if taken in large quantities injurious, 60, 61. Coffee-houses, 66.
- Cold — effects of sudden exposure to, 14. Exposure to cold one of the chief causes of mortality of infants, 15. Effects of cold on the aged, 114.
- Combe, Dr. A. — his work on Physiology referred to and quoted, 21. Ditto, on Dietetics, 56.
- Combe's Constitution of Man, 2, 3.

- Combustion — effect of, on the air, 23.
- Commercial speculation the most widely operating cause of mental excitement in this country, 73, 74.
- Crabbe — anecdote of, 20.
- Crawling — the infant's first and best mode of progression, 29.
- Cummin, Dr. quoted, 82.
- Cuvier, 74.
- Death loses its terrors on a near approach, 120.
- Dentition, 8.
- Depressing emotions—injurious influence of, upon the body, 78, 119.
- Desks, 72.
- Desmond, Countess of, 122.
- Diet of infants and children, 7, 8, 9, 10. Diet must not be too simple. Evils of adhering to a single kind of food, 43, 44. Diet of youth, 44. Of adults, 55.
- Digestion — physiology of, 41.
- Disease — various opinions as to the causes of its existence, 1.
- Division of labour conduces to the perfection of the arts and sciences; proofs of this fact in the medical profession, in the improved treatment of the ear and eye, 92.
- Dress of females, 13. Of the young generally, 50. Of the aged, 114.
- Drinks — best kinds of, 60. Proper temperature of, 66.
- Dyspepsia brought on by severe mental labour or excitement, 79. Speculators and students most subject to, *ib.* 80. Its remedies, 90, 91.
- Early rising recommended, 53.
- Editors of newspapers, 72.
- Education — influence of, on the health of children, 33. Ill effects of too early, 36, 37. Rules for the education of the young, 38. Education of youth, 51, 52, 53. Foreign education reprobated, *ib.*
- Edwards, Dr. Milne, 15.
- Esquirol quoted, 87.
- Excursions into the country recommended, 98.
- Exercise one of the most important points in the training of the young, 7.

Faraday, Dr. 39.

Farinaceous food, 56.

Fermented liquors extremely hurtful to the young, 10. Their effect upon the nervous system and the circulation, 61, 77. Upon the stomach, 61. Their uses, 63. Their consumption in this country much less at present than formerly, 55.

Fever — sometimes induced by mental excitement; illustration in the case of Sir H. Davy, 81.

Flannel — advantages of wearing, 16, 114.

Food — ought not to be taken immediately after great muscular or mental exertion, 44. Evils of excess of, 46, 55. Account of the various kinds of, 56, 57, 58. Too much animal food consumed in this country, 58. Food of the aged, 110.

Fretfulness — its destructive effects upon health, 76.

Galen, 4.

Garden, Peter, 121.

Gardens — advantages of having, 68.

Gastric juice — account of the, 42. Proportion between its quantity and that of the food required by the wants of the body, 42, 43.

George the Third, 54.

Halford, Sir H. quoted, 120.

Hall, Robert, extract from a sermon of, 65.

Hartley, 33.

Haslar Hospital, 93.

Health, 1.

Hearing-trumpets, 106.

Heart injured by excitement, 81.

Heat, natural, of infants, 15. Of the aged, 113.

Hippocrates, 4.

Holland, Dr., quoted, 79.

Hufeland, quoted, 46.

Hunger, 42.

Hypochondriasis, description of, 81. Its causes, *ib.* 82. The aged frequently afflicted with, 119.

Infancy, 7.

Infants — great mortality of, 7. Should be nursed by their mothers, 8.

- Insanity—its causes, most prevalent in the most civilised communities, 86, 87. Comparatively unknown in barbarous and semi-civilised countries, *ib.* More frequently transmitted than any other disease, 88. On its increase in the countries where it is already most common—causes of its increase, *ib.* Early mental culture tends to produce it, *ib.* 89.
- Intemperance — remarkable case illustrative of the evils of, 61. Best means of eradicating habits of, 65. Mr. Thackrah quoted as to, 67.
- Jenkins, Henry, 123.
- Johnson, Dr. J., quoted, 48.
- Labour—its effects upon health, 66. Upon the health of the aged, 116.
- Laughter, an aid to digestion, 45.
- Leading-strings, 29.
- Lee, Professor, 39.
- Life, average duration of, in this country has been long, and is now increasing, 127.
- Light—its influence on health, 24. On vegetables, *ib.*
- List of distinguished men who have lived beyond the age of 70, 125.
- Locke, 33.
- London—four reasons in favour of residing in, 117.
- Longevity—a good, 108. A brief account of several persons remarkable for, 121. Thomas Parr's rules for, 122.
- Love, 76.
- Lungs — description of the, 17. Lungs of the aged often become diseased for want of sufficient exercise, 116.
- Mania — generally accompanied by perversion of the senses, 79. Case illustrative of this fact, 80.
- Margravine of Anspach, quoted, 102.
- Marriage, 100. Its influence on health, 101. Rules to be observed as to, *ib.* 103. Proper age for the contraction of, 102. Between near relations objectionable, and why, *ib.*
- Maturity, 55. The only period of life capable of prolongation, 108.
- Mayo, Mr. — Strictures on some passages in his "Philosophy of Living," 105.
- Meals — the proper time for and number of, 58, 59.

- Mental exertion and excitement — injurious effects of early, 37.
 Mental exercise, when properly regulated, conducive to health, 52, 83, 119. Mental excitement in relation to adults, 72. When excessive, injures the health in two ways, 73.
 Mental exercise of the aged, 117.
- Mill, James, 33, 128.
- Milton, 115.
- Mind — influence of upon the body, 77. Cases illustrative of, 27, 78, 102, 103.
- Monomania, a mitigated form of insanity, 85. Instance of, *ib.*
- Muscular exercise, 25. Of children, 28. Good effects of, *ib.*
 How to be regulated, 30. Various kinds of, adapted for youth, 47. Must not be violent—cautions to be observed with respect to, 48. Evils of excessive, to the young, 49. To persons of sedentary occupations, 69. Cases illustrative of, 71. Rules to be observed by the aged in regard to, 114. Too often neglected by them, 115. Kinds of, suitable for them, *ib.*
- Muscles — description of the, 25.
- Musical profession—liberality of the, 96.
- Napoleon, 39.
- Natural laws, 1.
- Nervous fluid—remarks on the, 34. Its uses, *ib.* Its sources, 35.
- Nervous system predominant in early life, 36.
- Newton, Sir Isaac, 39.
- Noise — children fond of making — this disposition not to be wholly restrained, 31.
- Nursing, 8.
- Nurseries, 24.
- Old age, 109. In many respects resembles the period of infancy, *ib.* Frequently the happiest period of life, *ib.* How it may be rendered so, 120.
- Optical instruments — observations on various kinds of, 105.
- Paganini, 90.
- Parks of London—improvements lately effected in regard to, 69.
- Parliament, Members of, 22, 118.
- Parr, Thomas, 122.
- Passions — their indulgence injurious, 75. Of the aged, 118. Sometimes fatal, *ib.* Exemplified in an anecdote, *ib.*

- Peel's, Sir R., opinion respecting out-door exercises, 69.
- Perspiration — what,—amount of, 11. Of the aged, 112.
- Phrenology, 33.
- Physical education essential to perfect mental education, 127.
- Political discussions one of the prevalent causes of mental excitement, 75. Remarks on, 98.
- Precocity generally a symptom of disease, 39.
- Precocious children, 38.
- Pregnancy, 103.
- Pritchard, Dr. — his treatise on insanity quoted, 89.
- Professions—exert great influence upon health, 89. Evils arising from improper choice of, 90. Rules to be attended to in the choice of, *ib.* Aneedote illustrative of rules, 91. Naval and military, 93. Legal and clerical, 94. Medical, *ib.* Musical, &c., 95.
- Quakers, 5. Their remarkable longevity, and its causes, 97.
- Religious excitement, 75.
- Residence — comparative advantages of a town and country—the choice of a residence of great importance, but especially so to the aged, 116, 117.
- Respiration, 16. Its uses, 18.
- Retirement and solitude long continued not adapted for man—the monks of primitive times subject to insanity, arising from their mode of life, 84.
- Rovin, John and Sarah, 124.
- Sabbath — advantages of its observance, 98.
- Seats — the best kinds of, 72.
- Sedentary occupations, 72.
- Shoes — thin, 48. Tight shoes, 114.
- Sinclair, Sir John — remarks on his Code of Health and Longevity, 118.
- Skin — an account of the physiology of the, 10.
- Sleep of the young, 32. Of the aged, 116.
- Smith, Dr. S., 33. Quoted, 127.
- Snuff, 105.
- Socrates, 4.
- Soups, 57.
- South-Sea Scheme, 75.

- Spectacles, 106.
- Stark, Dr. — his experiments on diet, 43.
- Stock-brokers, 79.
- Stoves — remarks on various kinds of, 72.
- Students injure their health by excessive application, 74.
- Suicidal monomania, 84. Generally produced by great activity of the passions, *ib.* Most prevalent in the most enlightened countries, 85.
- Swimming, 49.
- Sympathetic nerve, 79.
- Tasso, 80.
- Tea, 60.
- Temperance societies, 63. In America, 64.
- Temperature, 14. Sudden changes of, to be avoided, 15, 48, 49, 114.
- Thackrah, Mr., 67, 95.
- Theatres — cautions to be observed on leaving, 15. Should not be frequented by persons having weak lungs, 22.
- Thirst, 42.
- Thomson, Dr. A. T., quoted, 80, 85.
- Tobacco — remarks on its use, 104.
- Training — wonderful effects of judicious, 5.
- Tranquillity — beneficial influence of, upon health, 96.
- Travelling — cheapness and rapidity of modern, 99.
- Unripe fruit, 10.
- Vegetables — as food for the young, 45. Slow of digestion, 56.
- Ventilation — generally neglected, 21.
- Walker, Isabel, 121.
- Walking — if begun too soon, hurtful to infants, 29.
- Water — the best beverage, 60.
- Weaning, 8.
- West, Mr., 5.
- William the Fourth, 54.
- Youth, 41.
- Zortan, Petratsch, 124.

OBSERVATIONS, &c.

INTRODUCTION.

IN my works on the physiology and pathology of the Ear and Eye, I have remarked, that in order to hear and see well, it is necessary to be in health. I might have added, that hearing and seeing well are merely parts of what, in the aggregate, is denominated "health." For what is health? It consists in that state of the bodily organs in which they perform their respective functions easily and well; when, in fact, this performance is a source of pleasure. So that the possession of a considerable degree of health is essential to the enjoyment of happiness, and even to the preservation of life. By what means health may be secured is thus obviously an inquiry of the deepest interest to every one; for, in the majority of cases, we may refer ill-health to ignorance and disobedience of the laws regulating the condition of the body, and through it of the mind.

The causes of disease are yet but imperfectly understood. By some persons, disease is represented as the result of the direct agency of God, and inflicted by him for the purposes of moral training and correction: by others, it is considered to be the result of circumstances inherent in, and inseparable from, the present condition of man; and hence they conclude that it is vain to endeavour to escape its attacks. A careful consideration of facts, and a knowledge of the characteristics of the three great classes of natural laws—the physical, organic, and intel-

lectual or moral, would suffice to prove that both of these opinions or theories are unfounded. I shall therefore briefly explain what is meant by the natural laws, and shew some of their leading characteristics.

“Law,” says Blackstone, “in its most general and comprehensive sense, signifies a rule of action; and is applied indiscriminately to all kinds of action, whether animate or inanimate, rational or irrational. When the Supreme Being formed the universe, and created matter out of nothing, he impressed upon that matter certain principles from which it can never depart, and without which it would cease to be. When he put that matter into motion, he established certain laws of motion, to which all movable bodies must conform.”

“Every natural object has received a definite constitution, in virtue of which it acts in a particular way: there must, therefore, be as many natural laws as there are distinct modes of action of substances and beings, viewed by themselves. But substances and beings stand in certain relations to each other, and modify each other’s action, in an established and definite manner, according to that relationship. Altitude, for instance, modifies the effect of heat upon water; there must therefore be also as many laws of nature as there are relations between different substances and beings.”*

But these individual laws, though thus innumerable, may be all included in the three classes above mentioned.

The physical laws embrace all the phenomena of mere matter: an acid, for instance, applied to a vegetable blue colour, converts it into red; and this is said to take place according to a chemical law.

The organic laws are the established modes according to which all phenomena connected with the production,

* Combe—“Constitution of Man.”

health, growth, decay, and death of vegetables and animals take place ; and with these, therefore, I have in the following pages principally to do.

The moral and intellectual laws relate to all the manifestations of mind, or of instinct.

The most important characteristics of the natural laws are, 1st, that they are independent of each other ; 2dly, that they are universal, unbending, and invariable in their operation.

A man, by obeying one set of laws, does not thereby receive an immunity from punishment for disobedience of the other, nor *vice versâ*. For example, if an individual, in his endeavours to promote the well-being of his fellow-men, in the strictest obedience to the moral laws, should violate either the physical or organic, his moral excellence will not, and cannot, preserve him from the penalties of such disobedience : and, on the contrary, a man who lives in total disregard of his fellow-men, and in habitual infraction of the moral laws, may, if he observe the others, preserve his health, and perhaps attain old age.

The natural laws are universal, invariable, and unbending. No change of geographical situation, no lapse of time, no human skill, can enable us to escape from their influence. Human laws are limited in their effect by divisions of countries — they are constantly varying, and as constantly evaded ; and hence they are rendered far from completely efficacious. In these respects, then, human laws and natural laws are totally different.

Let us now apply these general facts to the particular subject of this work — the preservation of health.

Our bodies are subject to the physical and organic laws : so long, then, as we act in accordance with those laws, we shall enjoy health ; but every infraction of them produces a proportionate deviation therefrom.

Men cannot obey laws of which they are ignorant ; yet will their ignorance not exempt them from the penalties of disobedience. The first thing to be done, therefore, is to acquire a knowledge of the natural laws : and these, so far as they relate to health, it is the purpose of this book to expound.

Loss of health is, in every instance, the result of the infringement of one or more of the laws, or conditions, essential to the well-being and activity of every organ ; and the knowledge and observance of which are, to a great extent, within our own power.

Errors in relation to diet, to muscular exercise, to clothing, to ventilation, and to other every-day concerns ; morbid states of mind, the result of these errors, of excessive mental activity and excitement, and of defective education, not only prepare the way for disease, but are themselves the immediate exciting causes of it. By learning to avoid, modify, or control them, we may secure for ourselves a large amount of health, both of body and mind ; in other words, of happiness.

How much it is in the power of every one to effect, by attention to these apparently trifling things, in preserving his health, prolonging his life, and thus increasing his happiness, the numerous cases of persons attaining old age, in the possession of a great degree both of bodily and mental powers, are decisive proof. Galen, though of an infirm constitution up to the age of thirty, attained to a great age by taking much regular exercise ; so did Herodicus, the preceptor of Hippocrates, who was full of humours in his youth : Socrates and Agesilaus were also convinced of the good effects of exercise, and the former constantly enjoined it on his scholars. Asclepiades, a celebrated physician in ancient Rome, publicly declared, that he was content to pass for a fool, if ever attacked by illness, or if his death was caused by

any thing but old age, or accident. Nor was he deceived in his estimate of what he could accomplish, by conformity to the laws of nature : he lived more than a century without any illness, and died at last from the effects of a violent fall.

The frontispiece to this work represents the family of Mr. West, the celebrated painter, a late President of the Royal Academy, consisting of the great grandfather, the grandfather, himself, his wife, and his two children. Now had these persons disregarded the natural laws ; had they agitated their minds with the follies and vexations of the world ; had they been intemperate, kept late hours, &c. &c., they would probably never have had the pleasure of seeing their descendants in the second and third generations. I have inserted this Plate, which represents a healthy and happy family, as conveying a lesson worthy of universal imitation. It would be well for the world if the habits of that community, to which this family belonged — the Society of Friends, commonly called Quakers — were more generally observed.

The means which men possess of increasing their natural powers, by pursuing a systematic course of *training*, is clearly shewn in the surprising effects produced by a few weeks' training for the performance of extraordinary muscular feats ; in the course of which persons who had previously been unable to walk a few miles, have been enabled to walk as many as thirty in a day.* And if training can accomplish so much for the muscles, why should it not be able to increase the efficiency of the whole body ? If by training men can increase the vitality of their limbs, why should they be incapable, by the same means, of prolonging their lives ?

Some persons, however, may reply to all this, that

* Vide Captain Berkeley's " System of Training."

longevity is a thing not worth striving after, and that their motto is, "A short life and a merry one." Be it so; with such individuals I have nothing to do; they form a very small minority of the human race. Few indeed are those who care not for life, and who would not willingly take some pains to preserve it; and to the majority I address the following pages.

I conclude these introductory remarks by again asserting the universality and inflexibility of the laws of nature. They are no regarders of persons; they make no exceptions; every offence against them receives its appropriate punishment, and that with infallible certainty. These laws may sometimes appear to be tardy in their retributions, and to overlook offences; but surely, though silently and unobservedly, they are inflicting the exact amount of suffering which the case requires.

All hope of escape is thus shut out; and those, therefore, who value their health and happiness will see the necessity of conforming to whatever laws shall appear to be plainly made out and ascertained.

CHAPTER I.

INFANCY AND CHILDHOOD.

THE periods of infancy and childhood are those in which the human frame is most susceptible of injury, and in which morbid influences exert the greatest power: the large proportion (between a fourth and a fifth) which deaths under the age of two years bear to the total number of births, is a sufficient proof of this; and in those who survive infancy and childhood, the seeds of disease are often implanted by injudicious treatment at those periods. It is necessary, therefore, to begin to take care of the health at the commencement of existence, if it is desired to attain old age, or to be free from disease. But the care of health at these important eras devolves upon parents; and it is their bounden duty to make themselves acquainted with that on which the life and happiness of their offspring, as well as of themselves, mainly depend.

The points which are of the greatest moment in the treatment of the young are, diet, cleanliness, clothing, atmospheric temperature, respiration, muscular exercise, sleep, and mental education.

In discussing these subjects, it will be necessary to make many statements which are *universally* applicable; the conditions on which the health of children depends being in many cases the same as those that regulate the health of adults.

Nature has provided for every thing in the best possible manner; and to obey its laws is the highest wisdom. The organs of digestion, as well as all the other organs of infants, are imperfect, exceedingly weak, and easily disordered. The organs of mastication are wanting, and

therefore solid substances are unfit for their support. The difficulties which might hence arise in the rearing of the young are completely obviated by the opening of a source of nourishment simultaneously with the birth of the child ; of nourishment perfectly adapted to its wants, and amply sufficient to furnish it with all needful strength. The only food fit for infants is that which they derive from their mothers ; and hence those who are supported in this way are generally stronger and enjoy better health than those who are brought up differently.

And here I cannot refrain from reprobating a practice which has been often condemned by medical writers—that of putting out children to nurse. There are certain mysterious affinities between the constitution of a mother and of her offspring, which in an especial manner render the mother the best nurse of her child ; and which it is probable do not exist between the child and any one beside the mother. A few cases there doubtless are, which peculiar circumstances render exceptions to the general rule ; but for the most part, the practice of putting out children to nurse must injure both the child and the parent.

Another error, more common than that to which I have adverted, is the giving of artificial food too early. The time when infants may be safely weaned varies in almost every individual ; but it should be carefully borne in mind, that, for a long period after birth, their digestive organs are capable of digesting only the simplest food ; and to supply them too soon with any other than that which nature has provided, is to impose upon their organs a task they cannot perform ; and in endeavouring to accomplish which they are sure to be injured.*

* Improperities in the diet of children are one of the chief causes of the diseases which generally accompany the period of dentition ; and these diseases might be greatly diminished, both in number and danger, by proper attention to this subject.

For the same reason, the quantity of food given at any one time ought to be small; and infants need therefore to be frequently fed: for it must not be forgotten that *deficiency* in the supply of nourishment at this period is productive of the most disastrous consequences. But errors are seldom made in this direction. Infants are injured by *excess* far more than by deficiency of food.*

The safest guide in this matter is the *natural instinct* of the child. Never compel an infant to take food after it shews signs of satiety; nor suffer it to be long without food when it is sought for.

After children have passed the period of lactation, their diet should be simple, nutritious, and easily digestible. The activity of all the vital functions in childhood renders an abundant supply of wholesome food indispensable. And it is the more necessary to insist upon this, because the appetite of children is frequently attempted to be repressed; and that which is in fact the monition of nature, that a large supply of nutritious substances is needful to carry on the growth and development of all the organs of the body, is disregarded; and thus feebleness and liability to disease are induced.

But though abundant, the food of children ought never to be given in large quantities at a time: nor ought they to be allowed to eat till their appetites are cloyed. And they should especially be taught the importance of thoroughly masticating all solid substances. The digestibility of food depends greatly upon the degree of mastication which it has undergone: if swallowed in an entire state, or in haste, it disorders the stomach, and incapacitates it from performing its functions.

* In the children of the rich we sometimes have striking proofs of the evils of *excess*; and sometimes in the children of the poor, examples of the contrary evils arising from deficiency of food.

Every thing that is highly stimulating or difficult of digestion ought to be withheld from children; not only because their general health is affected by an opposite plan, but also on account of the injury which it inflicts upon the digestive organs. Animal food is of a stimulating nature, and ought to be sparingly given. High-seasoned food is still more improper for the same reason; and I need scarcely add, that fermented liquors of any kind whatever are little better than poisons. The parent who desires his offspring to enjoy health and attain long life, will above all things prohibit such articles being given to them.

Unripe fruits are difficult of digestion, and consequently unfit for children; and yet they are often allowed to consume as much as they please. This is a FRUITFUL source of indigestion, and hence of many other calamities. All the food of children ought to be thoroughly cooked.

I will conclude this subject by observing, that the stomach, like every other organ, may be improved by proper training. And the appropriate method of exercising it is to furnish it with suitable aliment in proper quantities and at regular periods. Either too great or too little action, or action ill regulated, enfeebles it, and, by deranging its functions, injures the whole economy.

Some explanation of the structure and functions of the *skin* is necessary to enable my readers to comprehend fully the importance of cleanliness, clothing, and the due regulation of temperature.

The skin is that membranous covering which extends over the whole surface of the body, and which, besides performing its specific functions, serves to connect and protect the more delicate parts situated beneath.

It is composed of three distinct layers—viz. the cuticle, or external skin; the mucous coat; and the true skin.

The two former are of service principally as shields to the true skin: it may be noticed of them that they are both permeable, and that the mucous coat is the seat of the colouring matter of the skin.

The dermis, or true skin, is the thickest of the three layers; and its functions are of the most important kind. It is abundantly supplied with blood-vessels and nerves, and may indeed be said to be wholly composed of them. The capillary branches of the blood-vessels are ramified upon it, and are so exceedingly numerous, that, as is well known, no part of the skin can be punctured with the finest needle without effusion of blood. The point that is of most practical moment is, that the capillary vessels of the skin are the channels from which that important exhalation—perspiration—is given out: on the regular and uninterrupted performance of this process the health is greatly dependent. Absorption is also carried on by the skin.

The following is a brief statement of that function of the skin which we have at present to consider—that is, perspiration.

The particles which constitute a living body are continually changing. They wear out, or, rather, their nutritious qualities become exhausted; and they are then removed, to make way for new particles. And the channels by which they are removed are various—the lungs, the bowels, the skin, &c. The perspiration is waste matter thrown out of the system, the amount of which is far greater than is commonly imagined. In hot weather, or during great exertion, every one knows that it is of considerable quantity; but comparatively few are aware that it is going on at every moment when the body is in a healthy state.

Many physiologists have endeavoured to ascertain the average quantity of cutaneous exhalation. The results of

their inquiries are various; but those who give the smallest amount reckon the insensible perspiration of an adult to weigh at least a pound and a half per twenty-four hours. But what is caused by great heat and much exertion is far more abundant, and accumulates on the skin in the form of sweat; and as much as three pounds has been lost in one hour under these circumstances.

Chemists are not agreed as to what are the exact elements of the perspired matter. But it is well established that it consists of a large proportion of water and of various salts and animal matter.

Let us now see what rules can be deduced from these ascertained facts, for the promotion of the health not only of the child, but of the adult also.

And first in relation to *cleanliness*.

When the perspiration comes to the surface, the watery particles are rapidly evaporated, and the more solid substances which were held in solution are deposited upon the skin, and, if suffered to remain, obstruct its pores, and thus stop the perspiration: the effect of which is to keep in the body a great quantity of noxious matter, deteriorating the quality of the blood, and thereby unfitting it for supporting and nourishing the frame. Moreover, since action is essential to the well-being of every organ, the skin, thus prevented from performing its functions, becomes diseased, and scrofula attacks it. Still further—it has been mentioned that the lungs also perform the same office of excretion as the skin; and if by any means the latter is unfitted for its duty, the lungs are overtaken, by having to take the office of the skin; and hence they are weakened and injured.

Nor is this all: it has been stated that the skin is an absorbing as well as an excreting organ; and thus bodies brought into contact with it are drawn into the circulation. This remarkable fact is too well established to re-

quire proof in this place. If, then, the residual parts of the exhaled matter are permitted to remain upon the skin, they are conveyed back into the body, and act on it as a poison, sometimes so powerful as to occasion even death. And this of course happens, if noxious substances of any kind come in contact with the absorbing surface.

It results from this that personal cleanliness is a matter of first-rate importance. The entire body ought frequently to undergo ablution; and tepid bathing is perhaps the best mode of performing it. It is gratifying to observe the attention that is now beginning to be paid to this subject, and the facilities that are afforded to every one for taking care of his health in this direction. But even where these are wanting, the abundance of water takes away every excuse from those who neglect the duty of cleanliness.

These remarks are applicable not only to children, but universally. In reference to them, however, it may be added, that bathing in cold water is frequently fatal, and that warm water is in most cases preferable. Reasons in support of this doctrine will be presently given.

The next thing to be considered is *clothing*.

The considerations which shew the necessity for *personal* cleanliness, prove also the importance of cleanliness in dress. For as portions of the dress are in constant contact with the skin, it takes up the perspiration, and retains many of its impurities, which, as I have before stated, are liable to be absorbed into the system. The linen ought therefore to be frequently changed, particularly in early life, when cutaneous diseases are common.

All the parts of the dress ought to be loose, and of a porous texture, both to give free play to the vascular circulation, and to permit the free exit of the perspiration, and to absorb it readily. How far at variance with these rules is the dress in this country, of females in particular,

it is needless for me to say. One would think that it had been adopted for the express purpose of hindering the development of the body, and of retarding its functions: certain at least it is that such is its effect; and no reform would tend more directly to increase the happiness and well-being of our country, than the adoption of more natural modes of dress.

Another important quality of clothing is warmth; in treating which the subject of *temperature* generally will be discussed.

It has been stated that the vessels which are ramified on the skin, and from which the perspiration proceeds, are those minute branches of blood-vessels which are called capillaries. Now, in accordance with a general law of nature, cold contracts these vessels, so as to render them incapable of admitting the red particles of blood, and frequently closes them altogether. By sudden exposure to cold, the blood circulating in the capillaries is immediately driven in upon the internal organs, which, thus over stimulated by too large a supply of blood, are deranged and injured; and, by the same means, perspiration being stopped, the task of expelling the waste matter is thrown upon the other excreting organs, which being thus made to perform greater labour than they are naturally capable of doing, frequently receive permanent and fatal injuries. The most usual form that disease, generated by these circumstances, takes, in the first instance, is that known as a common cold; all the phenomena of which arise from the lungs having to perform the duty of the skin in addition to their own: hence the close connexion between colds and pulmonary complaints.

It is a prevalent error to suppose that the constitutions of children are fortified by early exposure to cold; whence arises the inexpressibly absurd practice of bathing infants in cold water, even in the midst of winter. The

circulation of infants is almost wholly cutaneous; and any severe impression of cold upon their highly sensitive and vascular skin destroys the natural distribution of the blood, producing bowel complaints, inflammations, and convulsions: which, if they do not destroy life, at least weaken the constitution, and prepare it for the reception of other diseases.

The researches of Dr. Milne Edwards have conclusively shewn, that to no one cause more than to injudicious exposure to cold is the great mortality of infants to be attributed. The natural heat of young animals is several degrees lower than that of adults: they lose it more rapidly, and recover it more slowly; and the necessity for keeping them always in an atmosphere of considerable elevation, or of protecting them with warm clothing, is therefore obvious. But, at the same time, care must be taken not to confine children to very hot rooms, nor to clothe them too heavily. The skin is thereby opened and relaxed, and liability to take cold, at every change of temperature, is occasioned. In this, as in every other matter, the maxim, "*in medio tutissimus ibis*," holds good.

The reason why exposure to rapid changes of temperature are so injurious is now, I trust, sufficiently obvious; and I need not point out the danger of emerging from the heated atmosphere of theatres, and other crowded places, into the cold night-air, unless care be taken to ward off the evil effects of so doing, by additional clothing and active exercise.

Nor can any thing be required from me to shew the imprudence of those who, while freely perspiring, drink large quantities of cold water; or, worse still, plunge into it. Nothing but ignorance, or insanity, can excuse these suicidal actions; and yet they are too frequently committed in spite of knowledge and reason.

At every period of life, but more especially in youth,

the clothing should be sufficiently warm to keep up the natural heat of the skin. Any thing less than this is certainly hurtful, in the way already pointed out: but by too many persons, particularly by the young, it is considered a mark of manliness and vigour to go through the winter in the same kind of dress as they wear in summer; and to adopt more suitable clothing is despised as effeminate. But if these MEN knew the consequences of such conduct, they would perhaps hesitate before they preferred the shew of manliness, attended with premature weakness and decay, to the appearance of effeminacy, when conducive to health and strength.

As an article of winter clothing, nothing is more useful than flannel: it is a bad conductor of heat, and thus prevents the escape of the heat of the body; and it also serves to defend the body from the effect of sudden external changes. Its rough and uneven surface affords a gentle stimulus to the vessels and nerves of the skin; and being of a loose and porous texture, it is better adapted to absorb the perspiration than any other material in common use.

The next subject which demands our attention is *respiration*.

Some knowledge of the organ is a necessary preliminary to any satisfactory acquaintance with the function. I shall therefore give a brief description of the lungs, the principal organs by which respiration is performed. But previously to so doing, an account of the blood, its nature, properties, uses, and circulation, is requisite.

Blood is of two kinds; the one arterial, or red, the other venous, or dark. The arterial is contained in that set of blood-vessels which are denominated arteries, by which the blood is conveyed *from* the heart to every part of the body; the venous in the veins, which return the blood from the extremities *to* the heart.

The essential distinction between arterial and venous blood is, that the former alone nourishes and sustains the body; the latter being the arterial blood deprived, in its course through the body, of all its nutritious qualities.

The two sets of blood-vessels are connected together by their respective capillaries; and the blood passes from the arteries into the veins.

The two sets of capillaries do not, however, directly communicate with each other. These vessels terminate in minute canals, which they work out in the substance of the body; and from the blood flowing in these canals, each tissue attracts to itself those particles which have an affinity with it; and by this vital process the various structures of the body are developed and sustained. At the same time the worn-out particles are returned into the vital current, and pass with the remainder of the blood, now deprived of many of its nutritive particles, into the veins, which, gradually converging, unite at length in forming two great veins, the superior and inferior vena cava, which pour the blood into the right auricle of the heart.

From this cavity the blood passes into the right ventricle, which propels it into the pulmonary artery; and this, dividing into two branches, conveys the venous blood to the lungs.

The lungs are two light, spongy, conical bodies, situated within the two lateral cavities of the chest, the bony walls of which surround and protect from external injury these delicate organs. The lungs are almost wholly composed of blood-vessels, bronchi or air-tubes, and air-cells, connected and supported by cellular tissue. The bronchi are ramifications of the trachea or windpipe, by which the air is conveyed into the lungs; they terminate in the air-cells, on the surface of which the capillaries of the pulmonary artery are ramified; and thus a stratum of venous blood,

several hundred feet in surface, is brought into contact with a stratum of air still more extensive, which contact has been proved to be no wise impeded by the coats of the capillaries, and the mucous lining of the air-cells.

It has been estimated that the circulation of the blood in a man is completed in about two minutes; so that the whole volume of blood passes through the lungs twenty-eight times every hour.*

But it will now be asked, what is the purpose of this contrivance? what effect is produced upon the blood by this exposure to the air?

We have seen that the blood in its course through the body deposits its nutrient particles, and receives those which are noxious or useless, and thus becomes incapable of supporting life. Food supplies fresh particles, and the air is the agent whereby these fresh particles are vitalised, and the noxious removed.

Atmospheric air is a compound body; its elements are azote, oxygen, and carbonic acid. The proportions of which, in 100 parts, are: azote, 77; oxygen, 22; carbonic acid, 1. The two former are simple gases, the last is a mixture of oxygen and carbon: it is probable that it is not an essential constituent of atmospheric air.

The proportion which these elements bear to one another in pure air is that which is most conducive to health. If the quantity of oxygen is increased, the circulation is quickened, and symptoms of fever appear; if, on the other hand, the proportion of carbonic acid is great, it diminishes the vital energy, produces headaches, languor, and even death.

When air is respired, its composition is altered; the

* The pulsation of the heart takes place 100,000 times a-day; so that the pulse beats about 70 times in a minute— $70 \times 60 \times 24 = 100,800$.

quantity of azote remains almost the same, but a large portion of the oxygen disappears, and is replaced by carbonic acid. The consumption of oxygen is regulated by a great variety of circumstances, which it is of little practical importance to expound; the fact which is carefully to be noted is, that in respiration oxygen gas is consumed, and carbonic acid gas produced.

The principal impurity of venous blood is the extensively diffused element denominated carbon, which forms the basis of every variety of the vegetable kingdom. Oxygen has a chemical affinity with carbon, and in certain circumstances these elements combine and form carbonic acid gas. "The great object of respiration is to enable the carbon of the blood to enter into chemical combination with the oxygen of the atmosphere; and that they do combine is certain from the disappearance of both, of carbon from venous blood, and of oxygen from inspired air; that they do form, by this union, carbonic acid is also certain, from the fact that this acid is generated in proportion as they disappear; and that the superior properties of arterial over venous blood must result from this union is established from the necessity of arterial blood for the purposes of life, and the necessity of oxygen for the formation of arterial blood."*

Since, then, respiration completely changes the constitution of the air, consuming the vital portion, and substituting for it a gas of the most deleterious nature, it follows that a constant and copious supply of fresh air is indispensable to healthy existence.

Were it needful, a long list of fatal events caused by breathing impure air might be given. It will be sufficient to refer to the often-cited catastrophe of the Black Hole at

* Animal Physiology, p. 109.

Calcutta ; which, dreadful as it was in itself, has yet perhaps been productive of extensive good, by forcibly impressing on men's minds the necessity of paying attention to the laws of nature. The following occurrence related in the biography of the poet Crabbe, published a year or two ago by his son, is another striking proof of the statements that have been made. "Soon after his arrival" (at school, when about eleven years of age), "he had a very narrow escape. He and several of his school-fellows were punished for playing at soldiers, by being put into a large dog-kennel, known by the terrible name of the 'Black Hole.' George was the first that entered ; and the place being crammed full with offenders, the atmosphere soon became pestilentially close. The poor boy in vain shrieked that he was about to be suffocated. At last, in despair, he bit the lad next to him violently in the hand,—'Crabbe is dying—Crabbe is dying!' roared the sufferer ; and the sentinel at length opened the door, and allowed the boys to rush out into the air. My father said, 'A minute more, and I must have died.'"

Such eases as these are, it is true, extreme ones, and happily of rare occurrence ; but the destructive effects of breathing a moderately vitiated atmosphere, though not so appalling, are not less certain. The inhalation of such air may not leave any traces of its baneful influence, but slowly and surely, though imperceptibly, it is working evil—the body is weakened and rendered incapable of withstanding the attacks of disease, by being deprived of the nourishment of healthy blood : but because the process is gradual, it is overlooked, and suffered to go on uninterruptedly. It is evident, from the foregoing exposition of the function of respiration, that every inspiration of impure air must be injurious. Dyspepsia, consumption, and the general deterioration of the whole system, are some of the consequences of continual exposure to bad air.

I will now point out the principal and more common errors committed in relation to this all-important matter.

In the construction of houses and public buildings there is, for the most part, but little care taken to provide for due ventilation, which is capable of being regulated on the strictest scientific principles. Who has not experienced the ill effects of this neglect, in headaches, flushings, languor, and debility, incurred by attending meetings of large numbers of persons? And all these evils are caused by the inhalation of air from which much of its oxygen has been abstracted, and which is thus unfit for the purposes of respiration. Dr. Combe, in his valuable work on Physiology, informs us that, “ During the winter of 1834 an unusual number of courses of popular lectures were given in Edinburgh, many of which were very fully attended. From the utter impossibility of *safe* ventilation, those courses which were most crowded were accessible only at such an expense of health and suffering on the part of their less robust auditors, as served to neutralise in a great measure the advantages which might otherwise have been derived from them. Several of my own friends were compelled to discontinue their attendance; while others persevered, although at the certain cost of a severe headache. This nuisance is the more to be regretted, as it has arisen solely from the architects and the public not having been sufficiently alive to the importance of procuring that prime necessary of life—pure air; and not at all from any difficulty of obtaining it, which could not, *at the first*, have been easily overcome.”*

It is sincerely to be hoped that more attention will be paid to this subject; and that provision for perfect ventilation will not in future be overlooked by the architects either of private or public buildings. Meantime, persons

* Physiology applied to the Preservation of Health, p. 231.

of delicate health, especially those whose lungs are weak, ought to beware of frequenting numerous and crowded assemblies: the theatre, the ball-room, and other fashionable places of resort, have destroyed many a victim.*

It is still a common practice to surround the bed with heavy close-drawn curtains, as if for the express purpose of confining the impure air around the sleepers; and as in many bed-rooms (frequently the smallest in the house) the usual channels of ventilation, such as chimneys, &c. are wanting, and the doors continue closed for several hours together, it is not surprising that the atmosphere of these rooms should become much vitiated; and this is probably the chief cause of the languor and drowsiness which many persons experience on first rising, instead of that buoyant cheerfulness which should be the result of rest and sleep.†

Care should be taken to provide for the constant admission of fresh air into sleeping apartments, which, instead of being the smallest, ought, in reason, to be the largest rooms of the house. At all events, during the day-time

* It has been remarked by a German writer, that persons who constantly frequent theatres never live long; and it has been noticed that members of the House of Commons who have been very attentive to their duties have seldom been long livers: there can be no doubt that the bad air of the House contributed to shorten their lives. And what can be worse than many of the modern club-houses? which, what with the number of water-closets, the smells from the cooking and lamps, the crowded state of the apartments, and the "*aroma*" of the members themselves,—are any thing but wholesome. And in many instances no attempt is made to remedy this evil by proper attention to ventilation.

† It is a remarkable fact, that if a canary-bird be hung up in a cage at night at the head of a bed with close-drawn curtains, it will be found dead in the morning.

they ought to be perfectly ventilated. Perhaps nothing tends so much to produce disease among the poorer classes of society as the practice of occupying the sleeping apartments throughout the day—a practice which must effectually prevent the complete renovation of the air, in such cases the more necessary on account of the confined situations of their dwellings.

It should be noted that oxygen is indispensable to combustion, and that the effect of fires, candles, or gas-lights upon the air is precisely the same as that of respiration, but in a greater degree. Where they are used, therefore, attention to ventilation is still more important; and express provision ought to be made to carry off directly the impure air which they so plentifully generate.

These remarks are universally applicable; no circumstances whatever can remove the necessity for pure air, although the mode of procuring it is frequently a matter requiring great care.—(*Vide* “Temperature,” *antè*.)

The observations which were made at the beginning of this work are sufficient, however, to shew that attention to respiration is pre-eminently needful during the earlier periods of life, when the processes of nutrition and growth are most actively carried on, and when, therefore, whatever impairs the quality of the blood must be more extensively injurious than when the body has reached maturity. Whenever the weather permits, children ought to be much abroad in the open air—in the fields, or wherever the atmosphere is least mixed with smoke and vapour. Sir John Sinclair observes that “the great mortality among infants under two years of age in London, must, in a great degree, be ascribed to atmospheric impurities; for in the new and improved streets, where the air may be supposed to be better, comparatively fewer children die at an early age than in the old and confined parts of the city.”

The nurseries and sleeping apartments of children should be large, airy, and well-lighted rooms. They are generally situated at the top of the house; and it is the best arrangement that could be made for ensuring them as free a supply of air as possible.

The impropriety of the practice of covering the faces of infants when sleeping with a thick cloth, or of confining their beds with curtains, is so obvious, from what has been said, that nothing more need be added on that point.

Before leaving this subject, a few remarks upon the importance of *light* may be properly made.

That light exercises a great and beneficial influence on the body, may be inferred from the ruddy fresh-coloured complexions of those who live in the country, and engage in agricultural occupations, compared with the dull, sallow countenances of miners, criminals confined in dark dungeons, and other persons long secluded from the solar beams; and the effect is the same in kind on those who reside in narrow lofty streets. The complexion depends upon the condition of the blood; and it is well known that light co-operates with the oxygen to communicate to the blood its scarlet hue.*

The presence of light seems to have a most important influence on vegetables: thus, the leaves of plants exposed to the solar rays, while they absorb the carbonic acid of the atmosphere, give off an equal volume of oxygen. In the dark, on the contrary, plants absorb oxygen, and disengage carbonic acid. These facts, of themselves, are sufficient to account for the different effects of night and day air on the human system. They explain also why it is

* Vide the chapter on Light, containing an account of experiments by Lord Brougham, and remarks by Sir J. Herschel, in the author's Treatise on the Physiology and Pathology of the Eye.

dangerous to fill the bed-room with plants at night—a practice which has often proved fatal.*

The next subject to be considered is *muscular exercise*.

I shall first give a short account of the constitution of the bones and muscles—the instruments of motion.

The bones are compound in their structure. They are formed of an animal and an earthy matter. The animal portion closely resembles cellular tissue; the earthy is phosphate of lime. The former is the seat of the life and growth of bones; while the other communicates to them hardness and the power of resistance.

The proportion which these constituents of bones bear to each other varies greatly. It is not the same in all the bones of the body, nor in every part of the same bone. In early life the animal portion predominates, and in infancy many bones are, in fact, composed of cartilage: in middle age the proportion is nearly equal, and as old age advances, the animal matter becomes smaller, and the bones rigid and brittle.

Bones are liable to disease, and are sometimes deprived of nearly all the earthy particles, and thus lose the power of resistance, and no longer serve to support the body.

The uses of bones are various; but the only one which it is needful for us to notice is, that they afford fixed points for the action of the muscles, and thus aid in the production of motion.

The muscles are those bundles of red compact fibres with which every body is familiar under the name of *flesh*. Muscles are composed of bundles of various sizes, each bundle being distinct and easily separable from the others

* Some excellent observations will be found upon this subject in the *Flora Londinensis* and *Botanical Magazine* of the author's late uncle, William Curtis, who was not only a celebrated botanist, but an able physiologist.

with which it is connected. These bundles or fasciculi are resolvable into a vast number of minute fibres; and the microscope has revealed that the fibre is further resolvable into still more minute threads, to which anatomists have given the name of filaments.

Muscles are more plentifully supplied with blood-vessels and nerves than any other substance of the body, except the organs of sense. Every filament is furnished with the ultimate branch of an artery, vein, and nerve, by means of which it is nourished and developed, stimulated and governed.

The essential characteristic of muscular tissue is *contractility*—the vital power of diminishing its length—of shortening on the application of stimuli. This is the property that distinguishes it from every other known substance, and which is the source of its chief use—the production of motion. The muscles acting upon the bones, which are connected by the ligaments, are the sources of all motion generated within the body.

Animal motions are divided into voluntary and involuntary; to the latter class belong those of the heart, and organs of nutrition: the former comprises those by which locomotion and external actions are performed; with which alone we have at present to do.

It has been already stated that muscles are abundantly furnished with nerves: one set of nerves conveys the stimulus from the brain to the muscles, and thus incites them to action; and another set carries back to the brain those sensations which indicate the exact condition of the muscles. Nervous influence is indispensable to motion; and the power of contraction depends greatly upon the strength of that influence; and hence any derangement in the functions of the brain, or of the nerves, immediately affects the action of the muscles. This is clearly seen in the case of a drunken man, whose movements are

weak and irregular, because his brain is disordered. And, on the other hand, a powerful mental emotion sometimes restores the use of limbs which have long disobeyed the will. The gouty man who, on beholding an enraged bull close behind him, sprang over a hedge, and ran a mile or two, was a striking proof of the influence of the mind over the muscles. It results, then, that the condition of the brain is an important item in the question of muscular exercise; and this subject will be fully considered in the proper place.

This account, though it omits many interesting and important particulars, is nevertheless sufficiently full for our purpose; which is to shew the necessity for muscular exercise, and to lay down the rules by which it ought to be regulated.

Every organ has allotted to it a distinct function; the performance of which is essential not only to the general health of the body, but especially so to the health of the organ by which it is performed. Appropriate exercise is indispensable to the preservation of the integrity of every organ; and in proportion as any organ receives too much or too little exercise, or exercise unappropriate or ill-timed, in the same ratio will be its departure from a state of health.

The degree in which muscles answer the purposes for which they are designed is in exact proportion to their strength, or power of contraction: their strength depends principally upon their size, and their size is regulated by the quantity of exercise which they receive. Without going into the physiological proofs of these propositions, it may be enough to refer to the increased size and power of the arms of a blacksmith, or of the legs of an habitual pedestrian.

I shall at present confine my remarks to the subject of muscular exercise in relation to children.

That such exercise is beneficial to the young in particular, may be inferred from the tendency which the young of all animals manifest towards it. Infants, while awake, are in a state of perpetual motion; and as they increase in strength, and their muscles become capable of more powerful action, they grow less and less able to endure constraint, and take delight in more varied movements. It may be as well, however, to state briefly the principal benefits which they derive from well-regulated muscular training.

The first of these is increase of size and power in the parts exercised. When an organ is exercised, the processes of waste and renovation proceed more rapidly than when it is inactive; and this result is brought about by the increased action of the arteries and nerves by which it is supplied.

But though this is the immediate result of muscular exercise, it is not the only one: exercise conduces much to the due performance of several important functions, and thus exerts a beneficial influence over the whole system.

Most arteries are deeply imbedded among muscles, every contraction of which, therefore, by pressing upon the arteries, gently assists the circulation of the blood, especially in the smaller vessels, and accelerates its return from the extremities. The value of this assistance may be estimated when we consider the evils of languid circulation, to which persons of sedentary habits, and especially females, are liable,—such as swollen extremities and varicose veins, besides the more extensive injuries which arise from a sluggish circulation.

The quicker the circulation, the greater is the quantity of blood which, in a given time, passes through the heart, the lungs, and the organs of secretion, as the skin, the liver, and the kidneys; and the greater, therefore, is the

amount of exercise which these important organs receive : the consequences of which are, the strengthening of the organs themselves, the more perfect purification of the blood, and its consequent greater fitness to nourish and develop the entire frame.

If to these advantages we add the assistance which muscular exercise gives to the organs of respiration and digestion, it will be evident that nothing is more calculated to preserve the health and conduce to longevity.

The infant's first mode of progression is crawling ; and it is the mode best suited to the condition of its bones and muscles, and to call them all equally into action. The bones are soft and flexible, the muscles are weak ; and neither the bones nor the muscles are capable of supporting the weight of the body. Many persons inflict permanent injuries upon infants, by making them stand upon their feet, and walk upright, before their limbs are capable of so doing ; the consequences of which mismanagement are, that the bones of the legs bend beneath their burden, and the muscles become shorter on one side than on the other, and thus the efficiency of both is impaired. To this cause must be attributed the prevalence of deformities of the lower extremities.

It is obvious, from these considerations, that *leading-strings*, and other devices of the same kind, cannot be otherwise than hurtful. By constraining an upright position, they keep the weight of the whole body upon the spine and legs, which, unable to sustain the load, deviate from their natural form, and become permanently distorted.

The first requisite, then, of healthy exercise is, that it be the kind adapted to the condition of those by whom it is taken ; and this adaptation is discoverable by the voluntary movements of each individual ; since exercise, disproportioned to the strength of the organs by which it

is performed, produces pain, and is therefore at once discontinued.

That exercise may be as beneficial as possible, it must be taken in the open air. One great good of exercise is, that it invigorates the respiration; the capacity of the chest is enlarged during active exertion; and the quantity of air inhaled is greater than at other times. Yet unless the air inhaled is pure, the advantages resulting from this circumstance are considerably lessened.

But there are some states of the atmosphere during which it is impossible, or improper, to be out in the open air; and in such cases, children ought to be turned into a large, well-ventilated room, and permitted to engage in such pastimes as they may themselves choose; and the more varied, noisy, and cheerful these games are, the better.

It must not be thought that the kinds of exercise which are suitable for adults are the best for children also. A steady walk is of little use to those whose spirits are exuberant, and whose muscles are soft and pliable. Restraint, in these cases, is quite unnecessary and hurtful. It is almost impossible to get a child to walk steadily along; it is ever making excursions from one side to the other, as it is attracted by the various objects that present themselves. This rambling propensity is loudly condemned by many mothers and nurses,—a proof either of ignorance, or of love of ease; for this is the only efficient mode in which children can exercise their muscles and bones, and lay the foundation of a long and healthy life.

Nor is there any ground for fear of injury from this vivacious activity. It is, of course, indispensable that the places provided for children should be of such a nature as to prevent the occurrence of accidents: in summer, a level field, in the soft grass of which they may fearlessly roll

their yet tender limbs, and in which their yet undeveloped faculties may be delighted and called into exercise by the various objects of nature by which they are surrounded; in winter, a well-carpeted room, unencumbered with furniture: these, or such as these, are the appropriate places for the young; and these provided, nothing is required to render the unrestrained gambols of children perfectly safe, save the presence and control of their attendants.

The influence of the nervous system upon the muscles has already been slightly noticed. A little observation would be sufficient to convince every one that the mind is the grand director of the muscular movements; and that its varied states manifest themselves by corresponding actions. If this harmony be destroyed, but little benefit can be derived from muscular exercise. The mind must accompany and be in unison with the body.

Children are naturally cheerful; and their lively rapid movements accord well with this mental state; both being admirably calculated to promote their bodily and mental well-being. Let not the careful mother restrain these expressions of happiness,—which are themselves the *sources* of further happiness.

Another characteristic of childish exercise is noise—screaming and bawling invariably accompany it; and if such expressions of delight are prohibited, the children cannot proceed with their diversions. Here, as every where, we may discover the wisdom and beneficence of the arrangements of nature. This noise, which, to the adult, appears so useless, and which is to him a source of annoyance, and is therefore forbidden, is produced by the exertion of those delicate organs—the lungs. By this exercise they are developed and strengthened, and thus rendered capable of resisting the morbid influences to which they are, in our variable climate, peculiarly exposed.

I have not attempted to lay down any precise rules for the exercise of children; these, though necessary when the subjects of discourse are adults — persons freed from the dominion of instinct, and governed by considerations wholly unknown to the young, and which frequently interfere with the preservation of health — are needless in relation to childhood. This distinction is too often overlooked; and because men cannot trust to their instinctive feelings in regard to health, it is too hastily inferred that such is universally the case with children also. It is forgotten, or unknown, that the latter, not yet having the superior endowment of reason, possess much of that instinct for which the lower animals are remarkable; and that hence all that is necessary is so to control and direct their spontaneous actions as to prevent them leading to mischievous consequences. It will be seen that this is the principle on which all that I have said on the muscular exercise of children depends; and I am convinced that attention to it would, in every respect, greatly improve the management of the young.

These observations are, for the most part, applicable to the subject of sleep. Sleep is the repose of the brain; and, as every body is aware, is indispensable to the preservation of health. During sleep the vital energy, exhausted by the previous excitement and action, is restored; and the process of nutrition goes on more rapidly and completely than in the time of active exertion. In infancy and childhood, the brain, the source of vital energy, is weak and unformed; and the greatest demands are made upon the organs of nutrition: hence, at those periods of life, there is a greater need of, and *therefore* a greater disposition to, sleep, than in those which succeed. The proper quantity of sleep must be determined by this disposition; and, in general, it is injurious either to increase or diminish it by artificial means. It will suffice, on this

point, to say, that ten or eleven hours is considered to be the proper quantity for children under the age of eight years, and from seven to eight for adults.

We have now arrived at the last, most important, and yet least-understood subject in the treatment of the young, to which I proposed to direct attention—viz. the effects of education upon their health.

In this place I shall state the results of the labours of physiologists, respecting the functions of the brain, and its influence upon the body. These results constitute the principles from which all the practical rules upon the subject of the mind, in relation to health, must be derived. And I shall then proceed to lay down such of these rules as immediately affect the young under the age of ten years.

Whatever opinion may be entertained respecting the peculiar doctrines of phrenology, there can be but little doubt as to the soundness of its fundamental proposition—“the brain is the organ of the mind”—a proposition, indeed, which was maintained by distinguished men long before the promulgation of the theory of phrenology; and which has *since* been, and *now* is, held by philosophers who have scarcely any other opinion on the subject of the mind in common with phrenologists. To prove this fact it will be enough to refer to the writings of Locke* and Hartley,† of Mill‡ and Southwood Smith;§ *all* of whom *impliedly*, and the majority *expressly*, admit the doctrine in question; which I shall, therefore, not here attempt to prove, but assume to be established. If, however, any of my readers require proofs, they will find the arguments

* Essay on Understanding, in various passages.

† Observations on Man—Propositions 1 and 2.

‡ Art. Education, Encyc. Britannic.

§ Philosophy of Health, vol. i. chap. 6.

in its favour briefly and lucidly stated in the valuable little work of Dr. Brigham, of Hartford, United States, on the Influence of Mental Cultivation and Excitement upon Health, section 1.

The following remarks, then, proceed on the assumption, that whatever exercises or excites the mind affects the condition of the brain, and, through it, the *general health* of the body: for the manifestation of the mental faculties is not the only function of the brain—its functions are varied and important; and of such of them as bear upon our subject it is necessary now to give some account.

Nervous influence appears to be indispensable to the performance of every function, whether animal or organic; and hence the nerves, the channels by which it is conveyed from the central nervous masses, are diffused as extensively over the body as the vessels which distribute to every organ that not less necessary fluid, the blood; between which and the nervous influence there is this further analogy—that they are both variable in quantity and quality; which variations materially affect the condition of the system.

It is true, that very little is known of the nature of the nervous fluid—it is imperceptible, and its existence discoverable only by its effects. That, however, it does exist, and that its presence is essential to the carrying on of function, is nevertheless conclusively demonstrated. If the main trunk of a nerve be divided, and the cut ends held more than a certain distance apart, the organ which it supplies becomes powerless, and is no longer affected by its appropriate stimuli. Take, for example, the pneumo-gastric nerve, which goes to the muscular coat of the stomach: if this nerve be severed in the way mentioned, the contractions of the stomach cease, and the process of digestion is stopped; as has been proved by actual

experiments on dogs and other animals.* But if the cut ends of a nerve be left nearly in contact with each other, the flow of the nervous fluid goes on without interruption. It appears, also, that if a nerve be tied tightly, the effect is the same as if it were divided.

These facts clearly prove that the nerves are not the *sources*, but merely the conductors of the nervous fluid, which proceeds from the spinal column and the brain; with the last of which, as being far largest in bulk, and as performing functions of a more diversified and important kind than the other, we have principally here to do.

When any part of the body is actively exercised, an increased flow of blood and of nervous energy is occasioned to that part. Powerful action is indeed impossible without a large supply of nervous influence; the quantity of which sent to those organs placed under our immediate control being determined by the *will*.

“But,” to use the words of the distinguished Bichât, “it is a fundamental law of the distribution of vital powers” (of which the nervous energy is one), “that when they are increased in one part, they are diminished in all the rest of the living economy; that the *sum* is never augmented, but that they are necessarily transported from one organ to another; and therefore, to increase the powers of one organ, it is absolutely necessary they should be diminished in the others.” For example, while an individual is engaged in active muscular exercise, the blood and nervous fluid are withdrawn from the internal organs, and poured into those of locomotion;

* This and similar facts were demonstrated some years since, when Professor Majendie was in this country, at the late Joshua Brooks' theatre, where several experiments on greyhounds and other living animals were made.

and if, while in this state, he attempts to think intently, he will find it next to impossible to do so: or if, immediately after his exertion is over, he sits down, and eats a hearty meal, the stomach will not be able to digest it readily, because it is destitute of its proper share of blood and nervous influence. But when the increased action of the vessels and nerves of the muscles has subsided, and the balance of distribution has been restored, then the stomach will be equal to its duties.

When the mental faculties are much exercised, the nervous influence is concentrated in the brain, and consequently withdrawn, to the same extent, from the rest of the body.

We come now to inquire what is the condition of the brain in infancy and childhood; and what rules are to be observed in regard to mental cultivation at those periods.

The brain of a newly-born infant weighs about ten ounces: it is very soft, approaching to liquidity, nor are its parts distinguishable; yet it is now supplied with a larger quantity of blood, in proportion to its size, than at any after-period: it increases rapidly in size and firmness; its weight is nearly doubled at the end of the first six months; and thus the nervous system is early developed, and becomes the predominant system in youth.

“This great and early development, though necessary for the purposes of the animal economy, very much increases the liability to disease: it gives a tendency to convulsions, and to inflammation, and hydrocephalus, and to other diseases of the nervous system, which are most common and fatal in childhood.”*

If, then, the infant's faculties are prematurely called into exercise; if the parent, eager to impart early the rudiments of scholastic education, compels the child to

* Brigham, p. 24.

spend its energies in the acquisition of tasks and lessons ; or if its feelings are exposed to powerful excitement, the injurious consequences will be twofold : first, the nervous energy, at this time so necessary for the building up and perfecting of the body, is expended in fruitless intellectual exertions ; and thus all the organs of the body become weak and liable to fatal diseases : and, in the second place, the brain, by reason of the increased flow of blood to it, occasioned by mental excitement, enlarges unnaturally ; and thus the nervous system, already powerful, receives an accession of strength which completely destroys that balance between the various systems of which the body is composed, which is indispensable to health, and even to existence.

As to the first of these evils : it is certain that, by unduly exercising any one organ, or system, in childhood, and thus depriving all the others of that cultivation which they require, the favoured part is too greatly developed, and prematurely decays ; whilst those which are condemned to inaction are stunted and become feeble, and often lose their vital powers. The truth of these statements will be established by reference to the well-known fact, that those children whose mental powers are too early cultivated seldom or never possess healthy bodies, or arrive at maturity. The causes of this result are, the expenditure of the nervous energy on the brain, and the disproportionate quantity of blood sent to it, and the consequent inadequate supply of that vital fluid to the other organs.

Of the second class of evils, some are immediate ; others consist in creating predispositions to disease, which do not at once attack their victim, but suffer him to make some progress towards maturity, and then suddenly cut him off. To the former belong rickets, scrofula, convulsions, inflammation, and dropsy of the brain ; to the

latter, insanity, hypochondriasis in all its various forms, diseases of the heart, and dyspepsia.

The proof that some of these diseases result from over mental exertion will be given in a subsequent part of this book. At present we will leave the subject, by stating a few general rules deducible from the foregoing considerations.

The first years of life should be directed to laying the foundations of health, which are the foundations of happiness. Nature plainly declares that this is not the proper time for devoting the mind to the incessant labour of scholastic education; that the faculties of the child must be permitted gradually to increase in strength by means of the exercise which the varied aspects of nature and the companionship of its equals in years afford. Let the fond parent, who desires his child to excel in intellectual attainments, and therefore urges on its feeble powers to accomplish tasks to which they are unequal, be aware how vainly he strives. Suppose the object gained, of what avail are the most splendid acquirements, if they are made by the sacrifice of *health*; without which they cannot be turned to good account, either for his own benefit or for that of others? Besides, although it is possible so to develop the powers of the child as to make him outstrip, for a time, all his juvenile companions in the acquisition of knowledge, yet *ultimately* the actual amount of knowledge possessed, and the capacity of enlarging it, will be smaller than if the dictates of nature were obeyed; for the powers of the mind are thus worn out long before the period at which, in other circumstances, they would arrive at maturity: they become incapable of further exertion when they should be in their highest vigour. There are few instances, indeed, on record of precocious children who, on arriving at maturity, (which but few of such prodigies have ever attained,) did not dis-

appoint the fond expectations of parents and friends; but, on the other hand, many of the most distinguished men in every department of science and literature have been remarkable in their childhood for dulness and incapacity to learn.*

The parent who is so unfortunate as to have a precocious child, ought, as he desires his offspring to live and to be happy, by all judicious means to discourage the child's propensity to mental exertion. Precocity is, in almost every case, a symptom of disease — of disease which is nourished and strengthened by every excitement of the brain; and which can be overcome only by suffering the mind to enjoy tranquillity, and by strengthening the body to resist the attacks of the disease.

The following extract from the work of M. Julien, on education, will appropriately conclude these remarks on the effects of education upon the young, and also this chapter.

“The course to be adopted for the first ten years of life,

* Among these may be mentioned Sir Isaac Newton, who himself says that “he was inattentive to study, and ranked very low in the school, until the age of twelve;” — Napoleon, who is described by those who knew him well in his childhood as “having *good health*, and in other respects being like other boys;” — and, not to multiply examples, Adam Clarke, whose talent, when at school, appeared to be confined to the rolling of *large stones*, his character being that of a grievous dunce; — the Rev. Dr. Lee, the present professor of Arabic in the University of Cambridge, who up to the age of four-and-twenty was a journeyman carpenter; — and the present able lecturer at the Royal Institution, Dr. Faraday, who was brought up as a bookbinder. These examples are sufficient to shew that it is to self-education, rather than to that which is communicated at school, that eminence in the intellectual world is chiefly to be ascribed.

is neither to oppress nor torment them ; but, by plays, exercise of the body, entire liberty wisely regulated, and good nourishment, to effect the salutary and progressive development of the physical, moral, and intellectual faculties ; and, by continual amusement and freedom from chagrin (which injures the temper of children), they will arrive at the tenth year without suspecting that they have been made to learn any thing. They have not distinguished between study and recreation ; all they know they have learned freely, voluntarily, and always in play. The advantages obtained by this course are, good health, grace, agility, gaiety, and happiness ; a character frank and generous ; a memory properly exercised ; a sound judgment ; and a cultivated mind."

CHAPTER II.

YOUTH.

WHEN childhood merges into adolescence — that is, when the body has attained a certain degree of development — (which it generally does between the age of fourteen and seventeen), it is of course necessary to accommodate the treatment of the individual to the changes that have taken place in the condition of his frame. An attentive reader of the previous part of this book will have no difficulty in discovering how far the management of the child is suitable for the youth, and in what respects it needs to be altered. The directions that I have laid down for the due regulation of cleanliness, clothing, temperature, respiration, and sleep, in relation to infants and children, are applicable, in their fullest extent, to those who are in the immediately succeeding period of life. But, in respect to diet, muscular exercise, and education, the case is otherwise; and it will therefore be necessary, on these and some other subjects, to give special rules for the proper training of youth.

In this place it is requisite that I should lay before my readers a few remarks on digestion; which I have not yet entered upon.

It is hardly necessary to observe that the use of the various processes which have collectively received the name of digestion, is, by the assimilation of foreign substances to the blood, to make up for the waste which is constantly going on in every living being; and that the product of digestion is blood, the quality and quantity of which is mainly dependent on the proper regulation of diet, and on the integrity of the digestive organs.

The sensations of hunger and thirst are, in a healthy condition of the body, the warning of nature that a supply of aliment is requisite: and, taking this view of their use, the wisdom of the arrangement by which we are made to experience them is strikingly evident; for man, immersed in the occupations of life, would doubtless often fail to pay attention to the wants of his body, and thus cut short his existence, were he not by these monitors compelled to supply them. And as the force of these sensations is naturally indicative of the exact amount of food required, they furnish most valuable direction as to diet at every period of life.

One of the most important agents employed in the function of digestion is the gastric (from γαστήρ, *the stomach*) juice; a fluid which is secreted from the blood-vessels of the stomach, and is one of the most powerful solvents known, dissolving and reducing into a soft thickish pulp whatever is taken into the stomach as food, but exerting no power over living or inorganic matter.

From the recent observations of Dr. Beaumont, of the American army, (who, with praiseworthy assiduity and skill, availed himself of an opportunity, such as rarely occurs, to investigate the mysterious process of nutrition; having for many months, at his own expense, supported an individual who had received a gun-shot wound, by which integuments and muscles of the size of a man's hand were blown off the abdomen, and the coats of the stomach perforated, which never wholly closed up, thus revealing to ocular inspection its functions),—it appears that the quantity of the gastric secretion is always in exact proportion to the quantity of aliment required by the system; so that if more than this be consumed, the supply of juice will be insufficient to digest the whole. And bearing in mind what has been said about hunger, it will be seen that this fact renders highly pro-

bable the opinion of those physiologists, who hold that "the sensation of hunger is an impression produced upon the nerves of the stomach, through the intervention of the gastric juice, in a manner perfectly analogous to the action of light upon the retina. As light is the appropriate stimulus to the nerve of the organ of vision, so gastric juice appears to be the appropriate stimulus to the sentient nerves of the stomach."*

It has been established by the researches of physiologists, that the qualities of the gastric juice bear a close relation to the kinds of food habitually taken. The stomach of a herbivorous animal is, at first, incapable of digesting animal food; while that of a beast, or bird of prey, is equally unable to digest vegetable matters. But here, as in most other cases, habit exerts great influence; and if the food be gradually changed, the properties of the gastric juice will be essentially altered, and fitted to act upon it. Delabere Blaine states, that a horse lived for some time on animal food alone.

In man the qualities of the gastric juice vary considerably — the kind of food, the state of the health, the season of the year, modify its properties; and this is sufficient to shew that rapid and frequent changes in diet are to be avoided, as well as sameness or uniformity.

It is a great error to suppose that a diet composed of a single kind of food, however nutritious in itself, is one conducive to health. "Many observations and experiments shew that in man, at least, a mixture of various diet is not only consistent with health and vigour, but is highly conducive to both. This point is abundantly illustrated by Dr. Stark, of Vienna, who ultimately fell a victim to the zeal with which he prosecuted his researches; and who made himself the subject of a highly curious

* Animal Physiology, p. 30.

series of experiments upon the relative effect of various simple substances, when used exclusively as articles of food for a long space of time. The result shewed that the body is invariably brought into a state of extreme debility by such a course of diet, and that there is not a single article of food, not even the most nutritious, that is capable of sustaining the vigour of the body, or even of maintaining life itself, for any considerable period. By selecting, one after another, single and simple articles of food, and by confining himself exclusively to one, this experimentalist so irretrievably ruined his health, as to bring on premature death.”*

The only other general observation which I shall at present make upon this subject is, that a large supply of nervous energy and of blood is indispensable to the carrying on of digestion; and hence the impropriety of taking food immediately after active muscular exertion, or intense thought; and also of engaging in either within the first hour after a meal, during which time digestion proceeds most rapidly and vigorously; and when, therefore, it needs the greatest quantity of blood and nervous influence. These facts account for the languor and disinclination to powerful action which most animals—men not excepted—display after a heavy meal. A gentle walk, or a cheerful conversation, on the other hand, are aids to digestion. But, at the expiration of about an hour, most persons may safely engage in their usual employments.

I shall now make such applications of these principles to the diet of youth as are needful.

The vigorous appetite of the young is a proof that they require an abundant supply of wholesome food; and the digestive organs at this period are so vigorous, that little restriction is needed as to the kinds of food. But food of

* Animal Physiology, p. 47.

a stimulating nature ought still to be given sparingly, as well as nourishment in too concentrated a form. It is indispensable to the health of the bowels, that they perform their appropriate functions: but if highly nourishing food, as animal matter, be given too abundantly, the quantity of refuse is too small, and constipation, and other diseases of the bowels, are the results; to prevent which, well-cooked vegetables should form a large portion of the food of the young.

Still, it must not be forgotten, that deficiency of food at this time is productive of the most injurious consequences. If the youth be healthy, his appetite ought never to be left unsatisfied; and, although it must be done with limitation, animal food is also necessary.* As for other stimulants, as wine, or fermented liquors of any kind, they cannot but be hurtful, and ought, on no account, to be allowed. The taste at this period of life naturally prefers simple food; and, provided it be substantial, and of a sufficiently varied kind, the plainer the better.

It is evident, from the foregoing observations, that young persons at school ought not to be tasked too soon after their meals: they ought to be allowed to amuse themselves by cheerful conversation, or gentle pastimes, instead of being, as they too often are, hurried from the dining-room to the school-room, with scarcely a minute's relaxation. "Laughter is one of the greatest helps to

* Boarding-schools, for both sexes, are the places where this rule is most disregarded. In the schools of France, a great part of the food of the young consists of broths, in which there is but little nourishment. "A dog was fed on the richest broth, yet could not be kept alive; while another, which had only the *meat* boiled to a chip (and water), thrived very well."—*Sinclair's Code of Health.*

digestion with which I am acquainted; and the custom prevalent among our forefathers, of exciting it at table by jesters and buffoons was founded on true medical principles. In a word, endeavour to have cheerful and merry companions at your meals: what nourishment one receives amidst mirth and jollity will certainly produce good and light blood."*

Any directions that I may deem necessary respecting the *quantity* of food will be found in that portion of this work which relates to the middle period of life. In childhood and youth a healthy appetite is the best of all guides, and no other is required. But there is one rule, which ought to be universally observed — never continue to eat until the appetite is cloyed; rise from the repast even while a further supply of food would be grateful: in this case the stomach is not overloaded, and the work of digestion proceeds rapidly and well; but if this caution be neglected, a portion of the food will remain undigested for a long time, and give rise to many evils; and the reason of this is shewn by Dr. Beaumont to be the deficiency of gastric juice; the quantity of which secreted, at any one time, is in proportion to the wants of the system.

It is to be noticed, that the word *healthy*, as applied to appetite for food, means that state of the appetite which is in accordance with the condition of the body; and it is therefore a relative, not an absolute term. The appetite of a person in a fever is naturally small: and if it were otherwise, it would be an unhealthy appetite; because it would represent the state of the body to be different from what it really is. And, on the other hand, if a person in good health, and taking much muscular exercise, should have but little appetite for food, his appetite would be unhealthy.

* Hufeland, "Art of Prolonging Life."

The practical application of this statement is, that the appetite may be trained, and, by improper diet, be so perverted, as to be no longer a trustworthy index to the bodily condition. The means by which this result is brought about is most frequently excess of food. By habitually eating or drinking more than is needful, many persons acquire an appetite wholly unnatural, and thus turn that which was intended to guide them to health into a deceitful and destructive enemy. The evil consequences of too much food will be pointed out in the proper place.

Muscular exercise is essential to the preservation of health in this as well as in every other period of life; and having already shewn the advantages of it, I shall in this place merely mention some of those kinds of exercise which are best adapted for young persons of both sexes; and give such rules as ought to be attended to, in order to make them as useful as possible.

Whatever description of exercise is taken, it is always best in the open air, when the state of the weather permits; and those active out-door games, in which many persons join together, and which are attended with shouting and laughing, calling into action a spirit of interest and emulation, and thus making the mind accompany the movements of the body, are far more conducive to health than a solitary silent walk. Of this kind are many of those sports in which those who are engaged divide themselves into two parties—the one pursuing and endeavouring to overtake the other, and, in their turn, becoming the pursued party,—cricket, tennis, prisoners' bars, dancing, when performed in the daytime, and either in the open air or in large airy rooms—for as it is usually practised, during the hours which should be devoted to the worship of Somnus, and in rooms the air of which is utterly unfit for respiration, it is a most destructive amusement. If to these we add gentle gymnastic exercises of various

kinds, skipping, shuttlecock and battledore, ball, &c. &c., we shall have a list of exercises which, if properly indulged in, will be amply sufficient to develop all the muscles of the body, and give grace, vigour, and strength, to the entire frame.

It is not an unusual thing for boys, after playing at cricket, or other active games, to sit down on the grass while yet profusely perspiring; in consequence of which, they often contract very severe colds, which lay the foundation for much mischief—one of the forms of which is deafness. Girls should be cautioned against going to a window, or into any draft of cold air, immediately after dancing; which imprudence produces evils of the same kind as those above mentioned. And as I am on this subject, I may mention another fertile source of disease among young females—viz., the folly of wearing thin shoes at those seasons of the year when especial care ought to be taken to protect the extremities from cold and damp.

To make these exercises beneficial, they should be subjected to the following rules:—

Never continue any exertion after it *fatigues*. There is a point beyond which exercise, instead of invigorating, weakens: and this point may generally be known by the feeling of fatigue which denotes it.

Never indulge in *violent* exercises, especially in summer. The consequence of neglecting this rule is profuse perspiration, followed by loss of animal heat, and a feeling of chilliness at the extremities,—a symptom never to be disregarded. Moderate exercise, which gently stimulates the circulation of the blood, creates an agreeable warmth, and enlivens the mind, promotes digestion, respiration, and nutrition; and thus strengthens both the bodily and intellectual powers.

Dr. J. Johnson, speaking of violent exertion, truly says, “It did great harm, even when nations were more in a

state of nature than they are now. Galen, in his discourse on Thrasybulus, inveighs against the athletic practices of the gymnasium. A smart walk of a mile is to a valetudinarian, what a furious wrestle would be to an athletic. If we trace those dreadful aneurismal affections of the heart and arteries in early life, we shall find their origins in violent exercise, or sudden over-exertion, in nine cases out of ten."

Young persons should remember that they are still growing; that their organs are in a state of progression, not yet having attained their full development, and ought not therefore to be expected to perform those exercises which are proper and beneficial for the adult. A single day of excessive exertion has been known to stop the growth of young persons, and induce permanent weakness and ill health.

For youth of both sexes, cold bathing in summer, and tepid in winter, are highly useful, and ought to be frequently indulged in; but great care is to be observed that bathing in rivers be not commenced too early in summer, before the water has acquired a proper degree of temperature; and, at all times, that there be not too great a difference between the temperature of the body and that of the water. To expose the body to great and sudden varieties of temperature is always dangerous.

Swimming is an exercise which calls into active exertion all the muscles of the body, and is therefore one tending much to strengthen the frame; but it ought not to be continued for any length of time: the slightest sensation of weariness should be the signal for leaving the liquid element, and retreating to terra firma. To remain in the water after this monition, is not only to throw away all the benefits of the previous exercise, but to induce an

exhaustion of strength so great, as sometimes to prove fatal.

It is truly gratifying to observe the facilities that are daily springing up for enabling even the poorer classes of society to participate in the enjoyments of the bath: an enjoyment which has hitherto, in our country, been regarded as a luxury attainable only by the affluent, but which is in reality a *necessary* of healthful existence, and which therefore ought not to be confined to any one class of the community. The baths in the City Road, at Lambeth, at Brighton, and at Gravesend, deserve particular mention, both from their magnitude, and the low rate at which they are thrown open to the public. It is to be hoped that other establishments, on the same plan, will shortly be set up in various parts of the metropolis, and all over the country. Few things would do more to increase the sum total of health and enjoyment.

In a previous part of this book I have alluded to the truly absurd and pernicious practice—by no means confined to the softer sex — of encasing the body in garments which shackle every movement of the muscles, diminish the capacity of the cavities of the chest and abdomen, and thus effectually stop the development of the frame, and prepare it for the ready reception of many fatal forms of disease. These evils have been so repeatedly demonstrated, and so strongly denounced, by men of the first eminence in the medical profession, that it is surprising and lamentable that any necessity should exist for me also to raise my voice against it. Let those who care not for health and life—who willingly sacrifice them both at the shrine of false taste and fashion—persist, if they will, in this destructive custom; but let those, at least, who entertain juster views of the relative importance of hap-

piness and fashion, boldly abandon a practice which is opposed by all who are best fitted to understand its consequences.

The statement above made, that in youth the frame is not completely developed, applies not merely to the muscles, but to every organ of the body, and to the brain, the organ of the mind : and hence the cautions laid down for the regulation of muscular exercise are not to be neglected in that training of the mind which constitutes education.

The period of youth is that which is generally devoted to, and which is indeed best adapted for, scholastic education : and what I have here to do, is not to interfere with this arrangement, nor with established modes of tuition—my province is to point out the effects of education, and of the circumstances under which it is generally carried on, upon the health.

My first remark is, that the mental faculties ought not to be severely tasked. The time spent in most schools is far too long ; and, taking into account the hours employed in preparing lessons after or before the attendance at school, but little time is left for any thing else but sleep. This should not be : much nervous influence is still needed to superintend and control the vital processes incessantly going on in the daily enlarging frame. Muscular exercise and fresh air are essential to the formation of pure blood ; without which the development of the body cannot proceed for an hour. But at school, for the most part, the acquisition of tasks and lessons demands unceasing labour of the brain ; and thus the nervous energy, instead of being equally distributed to every organ and tissue, is concentrated in the brain. The time that should be passed amid the fields in pleasant pastimes, or in the prosecution of botanical or geological researches, is spent in confined rooms, among books, which, by incessant

perusal and repetition, fill the minds of their unhappy readers with disgust for literature of every kind, instead of being, as they might and ought to be, their guides to intellectual and moral excellence.

For the sake both of the body and the mind, this evil system should be changed for one more consonant with the laws of nature. The training of the body to perfection is not incompatible, but, on the contrary, strictly coincident with the highest mental cultivation. For let it not for a moment be supposed that I undervalue the importance of education, or desire to deter any one from bestowing upon himself, or upon his children, the best education he can obtain. But what proof have we that the system, which is so destructive to the body, is beneficial to the mind? On the contrary, might we not infer, without any knowledge of the actual results, and merely from the intimate connexion of the mind with the body, that such a system would be scarcely less injurious to the mind than to the body? And does not observation prove that this *à priori* inference is completely borne out by facts—that in this case at least the physical and moral laws, though perfectly distinct and independent, are yet closely connected, and that it is not possible to infringe one set of laws, without, in some respects, departing from the other?*

But if mental exercise be conducted in subservience to the laws of nature, it contributes largely to health and longevity: the way in which it does so must be sufficiently evident to those who have read this book. The *proof* that it does so is contained in the long lists of per-

* Vide Dr. Caldwell's work on physical education, for some observations on subjects connected with boarding-schools, to which too little attention is paid, but which are of considerable importance.

sons who, distinguished by intellectual activity, have attained old age: "Of 152 savans, taken at hazard, one half from the Academy of Belles Lettres, and the other from that of Sciences in Paris, it was found that the sum of years lived among them was 10,511, or above sixty-nine years to each man." *

I shall conclude my observations on this subject by a few miscellaneous remarks.

The practice of sending young persons to the Continent to be educated is one which has frequently entailed upon them the loss of health and happiness; and the acquisition of foreign accomplishments appears to be but a poor recompense for such evils: especially as the numerous excellent educational establishments of our own country, by employing able foreigners as teachers, afford all the facilities which can be enjoyed for that purpose abroad.

Pupils at boarding-schools are often compelled to attend church or chapel three times on the Sunday; and instead of obtaining a little relaxation on that day of rest, are, if possible, more closely confined then than at any other time. Two attendances are quite sufficient; and a stroll into the country in the remaining part of the day will do them more good, both bodily and spiritually, than a listless listening to words, which, by a constant repetition, exert no influence upon their minds.

The habit of early rising is one which conduces much to health, and ought to be encouraged, by all proper means, among the denizens of schools, and the young generally. It tends to produce that cheerful, buoyant state of mind which exerts so beneficial an influence over the bodily condition, that whatever is calculated to promote it deserves to be practised and enforced.

* Brigham on Mental Excitement, p. 64.

The good effects of early rising, and attention to punctuality and regular habits, have been well exemplified in our present Royal Family. Many of my readers can recollect frequently seeing his late Majesty George the Third, and Queen Charlotte, with the whole of their fine and well-regulated family, walking on the Terrace at Windsor; and I myself remember being there on a birth-day of the then Prince of Wales, when it was remarked that no one family in Europe possessed such high health and so extraordinarily fine an appearance. His present Majesty, then Duke of Clarence, in his naval uniform, could not fail to be noticed: he has not disappointed the hopes then entertained of him; and from his Majesty's early training, and the excellent example set him, he bids fair, by the blessing of God, and attention to his health, to exceed in length of life any of the previous kings of England, and to continue to reign for a long period of years in the hearts of his loyal and loving subjects.

CHAPTER III.

MATURITY.

WE come now to treat of the period of manhood.

I shall first consider the subjects of diet, exercise, and mental excitement, in their particular relations to this period of life ; and then such additional circumstances as belong peculiarly to it.

To give any precise rules on the subject of the diet of persons of mature age, is a matter of great difficulty, if it be not even impossible. Every variety of constitution, of age, of sex, of health, requires a distinct course of diet ; in particular cases, therefore, it must be left to the individual's own judgment, to determine what diet agrees with him best. But there are, notwithstanding, certain general principles, the exposition of which may be useful in enabling persons, with proper care, to regulate their diet in all ordinary cases. Some of these have been already stated ; and these it will be sufficient briefly to enumerate here.

Avoid excess of food. (Vide p. 46.)

Violent exertion immediately before or after meals ought to be abstained from.

Neglect of the former of these rules is, by the unanimous consent of writers on physiology, declared to be the main source of all the forms of dyspepsia and of its consequences. The kind of food is generally thought to be of much less importance than the quantity. Dr. Abercrombie, in his treatise on the diseases of the stomach, says, " In the regulation of diet, much, certainly, is to be done in dyspeptic cases by attention to the quality of the articles that are taken : but I am satisfied that *much more*

depends upon the quantity ; and I am even disposed to say, that the dyspeptic might be almost independent of any attention to the quality of his diet, if he rigidly observed the necessary restrictions in regard to quantity."

It is to be borne in mind that the excess here cautioned against has no reference to, nor can be measured by, any *absolute* quantity. That which would be an excessive amount of food if taken by one person, might be no more, or even less than sufficient for another person, or for the same person under different circumstances. The proper quantity of food is that quantity which the body actually needs, and is therefore so far from being a fixed quantity, that it varies with every individual, and with the same individual in every variety of circumstance. It is well that men are not left in this matter to the guidance of their reason — the appetite, when not perverted by bad treatment, is, as I have already shewn, a guide on which we may implicitly rely, representing and forcing upon our attention the real condition of the body.

Although the *quantity* of food is thus shewn to be the most important matter connected with it, yet it is, at the same time, undoubtedly true that substances differ widely in their digestibility and nutritive qualities ; on account of which differences some kinds of food are to be preferred to others, and some to be wholly abstained from, by those whose digestive organs are in any way impaired. For particular information as to the relative good qualities of the articles most commonly used for food in this country, I must refer my readers to works on the subject of dietetics, one of the best of which is Dr. Combe's, to which I am indebted for the following general statement relative to this point.

"Vegetables, generally speaking, are slower of digestion than animal and farinaceous aliments, and consequently, when digestion is feeble, are liable to remain in the

stomach till acetous fermentation takes place, and gives rise to acidity and flatulence. Fat and oily meats are nearly in the same predicament, and hence both form unsuitable articles of diet for dyspeptics. Soups and liquid food are also objectionable, both because they are ill adapted for being properly acted upon by the gastric juice and by the muscular fibres of the stomach, and because they afford insufficient nourishment. From the former cause they frequently impair the digestive functions, and from the latter they induce diseases of debility, which it is difficult to subdue. Daily experience furnishes examples of stomachic disorder from constantly eating soups, especially as a preliminary to an otherwise substantial dinner; and the fatal epidemic which prevailed a few years ago in the Milbank Penitentiary, was distinctly ascertained to have been partly caused by an insufficient and too liquid diet.

“ When, from the state of the health, or other causes, chicken-tea, beef-tea, veal-broth, or other kinds of soups, require to be given, their digestibility will generally be promoted by the addition of bread, barley, or rice, to give them consistency, and by taking little or no other food along with them. Even vegetables, when taken alone, are sometimes digested without difficulty, where, if mixed with other substances, they disorder the stomach.

“ Pastry, rich cakes, puddings, and other articles containing much fatty or oily matter in their composition, are perhaps the most generally indigestible of all kinds of food, and consequently ought never to be eaten when the tone of the stomach is impaired.

“ Plain well-cooked animal food, not too recently killed, and eaten in moderate quantity, with bread, rice, or potatoes, forms one of the most easily digested meals which can be devised for a weak stomach. Venison, and most

kinds of game, when not too high, are very suitable in the same circumstances.

“ In some states of the system, where the condition is irritable, and the mode of life not sufficiently active, red, highly animalised meat proves too stimulating, although easy of digestion. The same thing happens during recovery from illness: and hence fish, chicken, and other white meats, which excite less and are digested more slowly, are often allowable where beef, mutton, pork, &c., cannot be taken with impunity.”

As a general rule, the plainer the food the better: condiments serve only to stimulate and to prolong the appetite after the wants of the body have been supplied; and they are thus the causes of indigestion and other maladies.

The quantity of animal food consumed in this country is too great: it is commonly thought that without an abundant supply of it, it is impossible to be strong or healthy. Some animal food is, in our northern climate, undoubtedly necessary; but that its importance is too highly rated, will be evident when we consider that the Irish peasants live almost exclusively upon potatoes—the East Indians upon rice—the Italian makes his dinner of a piece of bread, wine, and a few figs—and that the French consume far less butcher-meat than our countrymen do, and are, notwithstanding, by no means a weak puny race. A substantial meal once a-day is, in general, enough of animal food.

What is the proper number of meals a-day? and what are the best times for them? are questions that have often been discussed.

From what has been already said, it is evident that the time of eating, as well as the quantity of food, ought to be regulated by the appetite indicating the wants of the system. But nature has given to man considerable power of

training even those organs whose functions are organic; and there is in his constitution a tendency to periodicity, which makes it both easy and advantageous to adopt fixed times for supplying his wants.

The arrangements that have been made amongst the various classes of society, in regard to this matter, are sanctioned by habit and custom, and are perhaps as good as any others that could be adopted.

As a general rule, an interval of from five to six hours should elapse between the meals; but this must, of course, vary according to circumstances, and depend upon the appetite. Persons engaged in business frequently do themselves much mischief by disregarding its monitions amidst the bustle and excitement of trade: after a time, it is true, the appetite subsides, but the necessity for food is not thereby removed.

It is no unusual thing for a merchant to breakfast at eight o'clock in the morning, ride several miles to town, and return to dine in the evening between six and seven o'clock, without having, during all that time, ate any thing. This long fasting is injurious; and the subsequent full meal still more so. In such cases a luncheon ought certainly to be taken.*

We now come to the subject of liquid food.

The fluids of the body are continually diminishing by means of secretion and exhalation; these the health of the frame renders it needful to replace: and this necessity is indicated by the sensation of thirst; a sensation perfectly analogous to that of hunger, and to which, therefore, most of the rules and observations already made in reference to the latter are applicable.

* A biscuit eaten about the middle of the day will preserve the tone of the stomach, which is debilitated by long fasting. Inaction injures it, as well as every other organ.

A few remarks on the use of liquids at meals, and on the various kinds consumed in this country, will comprise all that is necessary to be said on this subject.

The general practice of civilised men clearly shews, that the first meal should be of a liquid kind. The reason for this is the great expenditure of fluids during the night, which is manifested by the sensation of thirst commonly experienced in the morning.

It is by no means requisite that a large quantity of liquid should be taken at dinner; on the contrary, it is likely to delay the digestion of the meal; and, if habitually indulged in, permanently weaken the stomach.

The best time for taking drink is about three or four hours after a solid meal; and the usual time for drinking tea in this country corroborates this view of the matter.

Water, the fluid which nature has so abundantly provided, is that best fitted for man to drink: it is suitable for every variety of constitution, and is more effectual than almost any other liquid in allaying thirst; thereby shewing that it is the beverage designed to supply the loss of fluid to which we are perpetually subject.

There are many simple compounds in which water is the chief ingredient, such as ginger-beer, lemonade, toast and water, soda-water, tea, coffee, chocolate, cocoa, &c. All these are, for common consumption, far preferable to fermented liquors; and it is gratifying to observe the extent to which they have superseded these intoxicating drinks. The introduction of tea and coffee, in particular, into general use, has done much towards effecting this change; and notwithstanding the objections that have from time to time been brought against these exotics, the strongest evidence of their beneficial qualities is furnished by the constantly increasing quantity of them imported into this country. Still it must not be forgotten that they are stimulants; and that if taken too strong, or in too

great quantity, they give rise to nervous complaints ; and that the latter especially, although for the time an aid to digestion, does yet, like all other stimulants, if too freely indulged in, weaken the sensibility of the stomach, and derange its functions. And it must be borne in mind also, that diluents of any kind in large quantities relax the coats of that organ, and impair its efficiency.

As to fermented liquors, it is the almost unanimous opinion of physiologists, that to a person in a state of health they are decidedly injurious ; their effect is directly upon the nervous system and the circulation, which they stimulate and quicken. Now, in a state of health the nervous system is duly balanced, neither too active nor depressed ; and the circulation is of the kind best adapted for carrying on the processes of waste and nutrition. Whatever, then, tends, in however slight a degree, to disturb this condition of the system, is, *pro tanto*, a *cause of disease* : not the less a cause of disease because its effects may for a time be imperceptible, or because it may temporarily enliven the mind, and fill it with pleasing emotions. But fermented liquors (well are they denominated intoxicating, or *poisoning* ; τοξικόν, *poison*) are hurtful, not merely by deranging function—they inflict terrible organic injuries, which, if the bad habits be persisted in, become permanent. The following extract from the work of Dr. Beaumont, to which I have already referred, is so full of instruction, that I make no apology for its length. The individual who was the subject of his observations and experiments, a healthy, and, in general, a sober man, had been drinking copiously of ardent spirits for several days : when Dr. Beaumont examined his stomach, “ its mucous membrane was covered with inflammatory and ulcerous patches, the secretions were vitiated, and the gastric juice diminished in quantity, and of an unnatural viscosity ; and yet St. Martin described himself as perfectly well, and

complained of nothing. Two days subsequent to this, the inner membrane of the stomach was unusually morbid, the inflammatory appearance more extensive, the spots more livid than usual; from the surface of some of them exuded small drops of grumous blood; the ulcerous patches were larger and more numerous; the mucous covering thicker than common, and the gastric secretions much more vitiated. The gastric fluids extracted were mixed with a large proportion of thick, ropy mucous, and a considerable muco-purulent discharge, slightly tinged with blood, resembling the discharge from the bowels in some cases of dysentery. Notwithstanding this diseased appearance of the stomach, no very essential aberration of its functions was manifested. St. Martin complained of no symptoms indicating any general derangement of the system, except an uneasy sensation and a tenderness at the pit of the stomach, and some vertigo, with dimness and yellowness of vision on stooping down and rising up again; pulse uniform and regular, appetite good; rests quietly, and sleeps as usual."

This account presents us with a description of the noxious effects of ardent spirits, which could hardly have been imagined; and which, but for the fortunate chance which enabled a philosophic eye to explore the hidden recesses of the stomach, we might perhaps never have possessed. One circumstance deserves particular comment: it shews that the defence commonly set up by those who are addicted to fermented liquors, that they are none the worse for what they drink, is worthless: inasmuch as St. Martin "complained of nothing," "had a good appetite," "and slept as usual," at the very time that his stomach was in a state of active inflammation!

But *his* strength of constitution carried him through a trial, from which a less robust frame would receive far greater injury. It appears, from this account, that the

quantity of the gastric juice was diminished: one of the consequences of which would, in most cases, be loss of appetite; and this is actually one of the evils most commonly experienced by the intemperate; although St. Martin appears, in this instance, to have escaped it.

But it may be said, your statements may be conclusive as to the evils of indulging *to excess* in ardent spirits; but the abuse is no argument against the use: and many persons will be ready, on their personal experience, to testify the good qualities of various favourite liqueurs and compounds. To all of which I answer, that no one talks of *moderation* in the use of poison, nor concludes that because it is possible to swallow it in a diluted shape, and yet continue alive, it is therefore beneficial. The question is, whether spirits do not impart a morbid excitement to the system? This question must be answered in the affirmative; and what is this but to admit them to be hurtful?

But substances, poisonous in themselves, may often be exceedingly useful as medicines, in preserving health and life; and such is the case with fermented liquors. There are some conditions of the body, in which the circulation is sluggish, and the nervous system weak and depressed: here, then, is the occasion when such liquors may be usefully and appropriately prescribed. There are, no doubt, many such cases; and it would be absurd, therefore, to denounce their use absolutely and universally. But as no one takes medicine but by the advice and direction of his medical attendant, so let it be with fermented liquors.

In this work I am, of course, confined to the subject of health, and cannot enter upon the *moral* evils attendant upon the use of ardent or intoxicating beverages. But supposing it produced no other than physical ills, the magnitude of these would render any attempt to extirpate them worthy of our sincerest admiration and support. Such an attempt is the institution of Temperance Societies;

an attempt which has already been extensively successful in the land where it was commenced, and which is taking root in our own country.* The good effected by Temperance Societies must not be reckoned merely by the number of their pledged members; this, it is probable, is but

* In the lately published work on America, of Mr. J. F. Grund, remarkable for its statistical precision and accuracy, it is stated that in 1833 the American Temperance Society contained 2,000,000 members. And that in 1831, when the number was far less, 1,500 distilleries had been stopped; 4,000 merchants had ceased to traffic in spirits; 4,500 drunkards had been reformed; and 1000 vessels sailed without ardent spirits as a part of their provision, while the men were better able to undergo the fatigues and hardships of the sea than those in vessels where the old plan was persevered in.

In this country, temperance societies have already made some progress, but not so extensively as is to be desired. There can be little doubt, however, that they will increase in number and usefulness as the attention of the public is more forcibly directed towards them, and as the conviction of the destructive effects of spirituous liquors upon the health becomes more general.

Mr. Livesey, of Preston, has informed me that upwards of 30,000 persons in Lancashire, principally mechanics and artisans, have joined the temperance society; and that the good effects of temperance have already manifested themselves in the increased and increasing comforts of themselves and families.

“Temperance societies are not modern institutions. In 1517, Sigismund de Dietrichstein established one under the auspices of St. Christopher; a similar association was formed in 1600 by Maurice, Duke of Hesse, which, however, allowed a knight to drink seven *bocaux*, or glasses, at each meal, but only twice in the day. The size of these *bocaux* is not recorded, but no doubt it was an endeavour to obtain a comparative condition of sobriety. Another temperate society, under the name of the Golden Ring, was instituted by Frederic V. Count Palatine.”—*Curiosities of Medical Experience.*

a small part of their beneficial results: by powerfully calling the attention of the civilised world to the tremendous evils of intemperance, they have, doubtless, led many thousands of persons who have not enrolled themselves under their banners, to see the real state of the case, and to abandon habits so fatally destructive to physical, moral, and intellectual excellence.

There can, however, be little doubt that the most powerful and certain means of exterminating such habits are the diffusion of knowledge, the enlightenment of mankind, and the consequent production of a taste for pleasures of an intellectual kind among the masses.* The consumption of spirits in this country is ascertained by official returns to be far less in proportion to the population than it was one hundred years ago; and this diminution can be accounted for no otherwise than by the operation of the

* On this subject Robert Hall of Bristol makes the following remarks, in a sermon "on the Advantages of Knowledge to the Lower Classes:"—

"The acquisition of knowledge, by multiplying the mental resources, has a tendency to exalt the character, and in some measure to correct and subdue the taste for gross sensuality. The poor man who can read, and who possesses a taste for reading, can find entertainment at home, without being tempted to repair to the *public-house* for that purpose. He does not lie prostrate and afloat on the current of incidents, liable to be carried whithersoever the impulse of appetite may direct. The man who has gained a taste for books, will, in all likelihood, become thoughtful; and when you have given the poor the habit of thinking, you have conferred on them a much greater favour than the gift of a sum of money; since you have put them in possession of the *principle* of all legitimate prosperity. I am persuaded that the extreme profligacy, improvidence, and misery, which are so prevalent among the labouring classes in many countries, are chiefly to be ascribed to the want of education."

causes just enumerated, and by the introduction of tea, coffee, and other wholesome beverages.

In connexion with this latter cause may be mentioned the establishment in London and other great towns, within the last few years, of great numbers of coffee-shops; the effect, and at the same time the cause, of the improvement that has taken place in this matter among the lower classes of society.

Before leaving this subject, I may remark that the temperature of drink is of great importance; if too low, it occasions an abstraction of heat from the stomach and neighbouring vital organs so great as sometimes to produce death—and its lesser degrees must necessarily be hurtful; if too high, it injures the teeth, and relaxes the coats of the stomach, and thus affects its efficiency. Above all, sudden variations in the temperature of what we drink ought to be avoided. The degree of heat which seems in the greatest number of cases to be best, is about that of the healthy body, ranging from 90 to 100 of Fahrenheit.

On the subject of exercise I have already so fully enlarged, that I have here but little to add.

Manhood is the period which the condition of the body points out as that peculiarly adapted for labour; in which labour of a proper kind, and in moderation, so far from being an evil, and the necessity for it a curse, as it is commonly but ignorantly represented to be, is, in reality, indispensable (our constitution being such as it is) to the preservation of health and enjoyment. Well has the poet admonished those who take this false view of the subject, in the following lines:—

“ O mortal man! who livest here by toil,
 Do not complain of this thy hard estate:
 That, like an emmet, thou must ever moil,
 Is a sad sentence of an ancient date;

And certes there is for it reason great :
 For though sometimes it makes thee weep and wail,
 And curse thy star, and early drudge and late,
 Withouten that would come a heavier bale,
 Loose life, unruly passions, and diseases pale.”*

Castle of Indolence, c. i. st. 1.

The exercise which our occupations afford is, when they are of a healthy description, and not too long pursued, of the very best kind; inasmuch as it is one in which the mind as well as the body is engaged; and this harmony of mind and body I have already shewn to be requisite for the full realisation of the benefits of exercise.

It is deeply to be lamented that, notwithstanding the vast improvements that have of late years been effected in this respect, so many of the occupations of life are still destructive of human health and happiness. It is to be feared that many of the causes of these evils must long remain in operation; and that some of them are irremovable. But there can be no doubt that occupations are injurious, more by reason of the excessive length of the time of labour, than of any inherent unhealthy tendency; and that if men generally were acquainted with the laws of the animal economy, and applied their knowledge to the counteraction of the morbid influences to which they are daily exposed, they would escape many of the miseries which they now endure.† For example:

* History informs us that an ancient king of Persia commanded all his subjects to engage in some kind of labour or exercise before they ate their meals; alleging as a reason for so doing, that he wished to reign over a healthy and robust, and not over a sick, people.

† Intemperance and neglect of cleanliness are stated by Mr. Thackrah, in his valuable work on the effects of arts, trades, &c.

How many *young* men are there in this city, who, being engaged in sedentary occupations the greater part of the day, in banking-houses, merchants' counting-houses, or lawyers' offices, imperatively need a considerable quantity of muscular exercise to preserve their bodies in health and strength, and who yet, in sheer ignorance, give up almost the only opportunity they have of taking such exercise; and instead of walking to and from their places of business, get into an omnibus, and ride, for the express purpose of avoiding a little fatigue: whereas their elder brethren, who have risen an hour before them, may be seen walking, and thereby availing themselves of the advantage of exercise. And many of these same persons, breathing during the whole day confined and impure air, emerge therefrom, and, with admirable sagacity, proceed straightway into the still more impure air of a theatre, or other crowded place!

If individuals of this class knew their own interests, they would fix their habitations at a short distance (two or three miles) from town; and they would regard as an indispensable appendage to their dwellings a plot of garden-ground. These preliminaries arranged, they would be early risers; they would cultivate their gardens, and, whenever the state of the weather permitted, they would call in to their aid no other instruments of locomotion than those with which nature has furnished them. If such a plan as this were pursued, they would be able to

upon health and longevity, to aggravate most of the evils incident to those occupations which are most prejudicial in their influence upon health; and he in several places expresses his opinion that these evils might be much diminished but for the ignorance which prevails, among all classes of the community, of the laws of health and longevity.

resist the unhealthy influences to which they are in their daily pursuits exposed ; and a blooming cheek and cheerful eye would be more common phenomena in the city of London than they at present are.*

And yet, though the persons composing this useful and respectable class are in general neglectful of exercise, there are every year not a few victims from among them to excessive muscular exertion. Most of them enjoy once a-year a vacation of a few weeks—a resting from the cares and toils of business : and, as if to make up for their long confinement, many of these young persons determine to make the most of their short period of liberty, and set out on extensive pedestrian excursions. Ignorant or unmindful of the fact that the muscles, for want of due exercise, become weak and incapable of powerful action ; and that,

* Many new facilities have of late years been given to persons residing in town, of enjoying exercise in the fresh air : through the exertions of a few spirited individuals, whose *amor patriæ* is great, the parks have been rendered far more accessible to the public than they previously were ; and, above all, that most rural of suburban resorts, the Regent's Park, is now open, and every day receives many visitors in search of health.

But, although much has been done in this way, there is still room for improvement. On the continent, greater attention is paid to procuring places of exercise and amusement for the inhabitants of towns than in this country ; but there are indications that give us reason for hoping that our inferiority in this respect will not be suffered long to continue.

A short time since, an hon. member in the House of Commons moved, that in all enclosure-bills provision be made for leaving open space sufficient for the purposes of the exercise and recreation of the neighbouring population. Sir R. Peel, in supporting the motion, observed that it was most desirable that the authorities of every large manufacturing town, indeed of any town having a large population, should have power to set apart

to be beneficial, it is necessary that exercise should be proportioned to the strength of the organ — their object is to accomplish the utmost of which their limbs are capable. Having heard that exercise is conducive to health, and knowing that, for the previous twelve months, they have had exceedingly little of it, they imagine their best plan is to take advantage of the present opportunity, and to lay up a stock of exercise for the twelve months to come. Unmindful of the monitions which their weary limbs afford, they march on to the end of their predetermined journey, and console themselves for the pain they suffer by thinking that it is caused by *exercise*, and that it will eventually promote their health. No opinion can be more mistaken: this excessive fatigue weakens the body to such a degree,

an open space for public recreation and exercise; and he believed that there could not be a more innocent or legitimate source of amusement—a source of amusement which would be more conducive to health, or tend more to wean the humbler classes from those habits of dissipation which they sometimes contracted from the want of such places. The hon. bart. concluded by saying, that every one was pleased with the improvements that had been effected in the parks of London; and the same system should be extended to the large manufacturing towns. He would have no objection that a grant of public money, to the amount of 5,000*l.* or 10,000*l.*, should be made for that purpose.

With due deference, I would suggest the formation of a Public Botanical Garden, with hot-houses, &c. like that at Brussels, for exotic plants, such as spice trees, the bread-fruit tree, &c. A very suitable spot for this purpose is the ground in the centre of the Regent's Park, at present occupied by Mr. Jenkins under the Government—one of the most delightful in the park; from the mount in which there are views hardly to be surpassed for beauty, one of which might be supposed to be a hundred miles from town.

as often to produce permanent debility, and lay the foundations of fatal disease; nay, it is sometimes the direct cause of death—as it was in the following case, cited by Dr. Combe: “A young gentleman was employed as a clerk in one of the banks in Edinburgh. He was closely confined to his desk during the summer; and towards the end of July had become weak and emaciated from deficient exercise in the open air. His strength continued to decline till the middle of August, when he went to shoot on Falkirk Moor. On Friday and Saturday he was much fatigued by excessive and unusual exertion; and on Sunday evening was feverish and heated, and perspired very much during the night.” He was unable to return to business; and after passing three months in a feverish and sleepless condition, he died in the beginning of November. He was previously of a healthy constitution.

Now all this mischief might have been prevented by attention to a very simple rule, which has already been enunciated in this book, but which I will here repeat—viz. never continue exercise after it has become *painful*. Our muscles, like the rest of our bodies, are made susceptible of pain, for the beneficent purpose that we may know that they are in danger, and may thus be excited to do every thing in our power to remove them from it. It is a mistaken notion that exercise of all kinds, and under all circumstances, is beneficial. Unless it is adapted to the condition of the muscles, it will prove the agent of death, not the giver of health.

As I have before remarked, exercise is most beneficial when in unison with the mental state; and if amusement or business can be combined with it, the same amount of exercise will be far more useful than if it were taken for the sake of the exercise alone.

The effect of mental occupation in enabling persons to perform feats of strength, or to go through great muscular

exertion, is matter of common observation ; and was remarkably exemplified by Captain Barclay when training T. Cribb.

As closely connected with the subject of exercise, I shall append a few observations relating to those who lead sedentary lives.

Persons who are much occupied in writing, such as barristers, editors of newspapers, and those engaged in literary pursuits, will do well to have a high desk, at which they may stand and write whenever they are fatigued with sitting. This practice will be found extremely efficacious in preventing those desk diseases which are incident to such occupations.

The use of soft stuffed seats by sedentary persons is one which frequently occasions distressing hæmorrhoidal affections. An excellent sort of seat is one common in France, having a circular hole in the middle ; but the best seat is a common open cane chair.

The modes of warming by steam, hot water, and gas-stoves, now becoming prevalent, are decidedly objectionable, especially for rooms and buildings in which the sedentary are employed. They do not in any way assist in ventilation ; and thus the air of buildings in which they are used is likely to be less pure and wholesome than where fires in stoves are the means of diffusing heat.

We now come to consider the important subject of the effect of mental labour and excitement upon the health.

By mental labour is of course meant the exercise of the intellectual faculties.

By mental excitement is meant the activity of the moral sentiments and of the passions.

It must be recollected that the states of the mind affect the body through the brain, which, and not the mind itself, is liable to disease.

Mental labour or excitement may injure the health in

two ways. 1st, By depriving the body of that cerebral influence which is essential to the carrying on of function, or by vitiating it. 2d, By inducing disease in the brain itself, which it probably does by concentrating upon the brain the nervous energy which ought to be diffused over the whole body.

I shall first point out those kinds of excessive mental labour which are most prevalent in this country, and those habits which contribute most largely to the production of mental excitement; and then enter upon the consideration of the two classes of disease just enumerated.

The present age may be termed the commercial era. The spirit of trade prevails over the whole community, to the exclusion of almost every other feeling, and brings into subordination to itself the few feelings that it admits to take possession for a time of the minds of our countrymen. The loftiest sentiments of the soul, destined to rule therein, and to control and guide all the inferior powers of our nature, are often made subject to the low, the debasing love of gain. This state of society may be one through which it is necessary we should pass in our progress towards a higher civilisation; but it is one, notwithstanding, which, inflicting as it does so many evils, both moral and physical, upon those who are in it, it is the duty of every one, to the extent of his power, to endeavour to correct. It is for me to point out its physical evils.

Thousands—I might say millions—of our countrymen devote all their energies, bodily and mental, to the one concern of money-getting. Early and late they pursue their object; they engage in endless schemes for the increase of their wealth; their minds are perpetually on the rack; not a day passes without intense mental labour and excitement: their health is neglected, and their present comfort despised, that they may the more uninterruptedly pursue their

plans of aggrandisement.* The innumerable speculations that are daily starting up, and the avidity, the blind eagerness, with which they are entered into, are abundant evidence that this picture is not overdrawn. Who can enumerate the various associations for the carrying on of all imaginable objects, which occupy so large a portion of the attention of the legislature, and each of which promises to its promoters the speedy realisation of that after which all men seem to be striving — wealth? This, then, is the first and most widely operating cause of mental labour and excitement.

But there is a class of men, many of whom err in the opposite extreme of total disregard of pecuniary considerations, who yet disobey the laws of the animal economy as entirely as do those whom I have already mentioned. They are men striving after fame, or actuated by the nobler motive of advancing the cause of human happiness: men who spend their days and nights in the

* “Of the causes of disease, anxiety of mind is one of the most frequent and important. When we walk the streets of large commercial towns, we can scarcely fail to remark the hurried gait and care-worn features of the well-dressed passengers. Some young men, indeed, we may see, with countenances possessing natural cheerfulness and colour; but these appearances rarely survive the age of manhood. Cuvier closes an eloquent description of animal existence and change with the conclusion that ‘life is a state of force.’ What he would urge in a physical view, we may more strongly urge in a moral. Civilisation has changed our character of mind as well as of body. We live in a state of unnatural excitement; unnatural because it is partial, irregular, and excessive. Our muscles waste for *want* of action; our nervous system is worn out by *excess* of action. Vital energy is drawn from the operations for which nature designed it, and devoted to operations which nature never contemplated.”—*Thackrah*, p. 184, *second edition*.

acquisition of knowledge — who task their faculties to the utmost in their disinterested search after truth, and in communicating the results of their inquiries to the world. How many noble souls are there at this moment in our land, ever active, ever on the alert, ever labouring, and ever excited!—souls which scorn the acquisition of wealth, and are always devising plans by which they may gain credit for themselves, or confer on their fellow-men some new benefit! In our venerable halls of learning, in the crowded city, and in the silent country, such men abound; and though their aim is far superior to that of the great body of mankind, the physical evils which result from their injudicious pursuit of it are not the less numerous or severe on that account.

The causes of disease just referred to are habits of mental labour, and of excitement produced by, or necessarily connected with, that labour. Those which I am now about to mention are chiefly habits of excitement.

Indulgence in political discussions — in religious excitement and emotion — in gambling — and generally the immoderate indulgence of the passions.

It is not necessary for me to enter into any detailed statements respecting these causes of mental excitement. They all agree in this, that their effect upon the brain and nervous system is to excite and stimulate them to the utmost: it makes no difference whether the subject that engrosses the attention, and arouses the feelings and passions, be the jarring interests of party, or the joyful anticipations or dread forebodings of a future state—whether men are agitated by their lowest passions, or by their highest conceptions and aspirations—by hope or by fear*

* It is a curious fact, that, during the South Sea scheme, more persons lost their senses by the sudden acquisition of great wealth, than by the loss of it.

— the physical consequence is the same in kind, and differs in degree only according to the vehemence of that which produces it.*

But there is one state of mind which must be particularly noticed, since it cannot properly be said to be included in any one of those I have enumerated: it is that uneasy, discontented temper which causes men to vex and fret themselves at those petty occurrences which ought not to give the least annoyance. There are persons who seem to be always on the look-out for events that may afford them some excuse for expressions of anger and passion; who are unappy when they have no opportunity for finding fault; and who, when there is nothing of the kind in their own affairs, pry into those of others, for the purpose of discovering incentives to their ill-humour. It is of no avail to tell such persons that they cannot, by thus brooding over their misfortunes, as they term whatever displeases them, remove or alleviate them: they desire to do neither the one nor the other. Their perverted minds feel a pleasure in giving utterance to the restless thoughts by which they are agitated.

* The passion of love deserves to be mentioned, as being the most universally experienced, and as having the greatest tendency to excess, and in that state producing the worst of maladies. Disappointment in love is one of the principal causes of suicides; and this fact clearly proves the deranging effect of the passion upon the mental faculties. The progress of the disease, of which excessive love is productive, may be thus described: as the force of love prevails, sighs grow deeper, a tremor affects the heart and pulse, the countenance is alternately pale and red, the voice is suppressed in the fauces, the eyes grow dim, cold sweats break out, sleep absents itself, at least until the morning, the secretions become disturbed, and a loss of appetite, a hectic fever, melancholy, or perhaps madness, if not death, constitute the sad catastrophe.

This state of continual exacerbation and irritation is more fatal to longevity and happiness than almost any other form of mental excitement; and it is one exceedingly common.*

The last habit I shall mention as tending to produce mental excitement, is very different from those already enumerated: they are mental habits; this is the habit of drinking intoxicating liquors; the effect of which, as we have seen, is directly upon the brain and nervous system, and through them upon the mind. Ardent spirits are often resorted to by persons whose minds are in a state of excitement from other causes; and they invariably augment the excitement, and frequently render it fatal.

Before proceeding to expound the effects upon the health of these various states of mind, it will be useful again to advert to the functions of the brain, and to give some examples of it.

The brain is the organ of the mind—the organ which is exercised whenever an intellectual act is performed, or a sensation or sentiment experienced.

It is also the chief of those bodies from which proceeds the nervous fluid; a due supply of which is as necessary to the carrying on of function as the blood—necessary to the carrying on of the function of the brain itself, as well as of every other organ of the body.

That the condition of the mind has a most important influence upon the nervous fluid, either in respect to its quantity or its quality, or to both, is a point that appears

* Mr. Abernethy says, the state of men's minds is another grand cause of their complicated maladies. Many people fidget and discontent themselves about what cannot be helped: and as passions of all kinds—especially malignant passions—pressing upon the mind, disturb the cerebral action, they necessarily do themselves much harm.

to be completely settled by a reference to such cases as the following, which are by no means of rare occurrence.

An individual hears unexpectedly that some great calamity has befallen him—that a dear friend is dead—or that his affairs are ruined ;—in an instant he becomes paralytic—loses all power over one or more of his limbs, or even over the whole of his body. How is this? His muscles and bones remain unchanged, but he is no longer capable of setting them in motion—the stimulus by which his mind directed them is gone, and with it his power over them.

The same cause operates less strongly when a person about to partake with a strong appetite of a repast, receives unwelcome news—he turns away with disgust from the food he would a moment ago have relished, and loses all sense of hunger.

It is well known that the depressing emotions of fear, despair, &c., produce a liability to disease in circumstances otherwise harmless. For example, persons who entertain great apprehension of the cholera are very likely to be seized by it; and it is the same with other diseases. Sir George Ballingall, in his valuable work on Military Surgery, states that about 5 per cent is the usual proportion of sick in garrison, healthily and favourably situated; while during a campaign it is 10 per cent. But such are the beneficial effects of success and cheerfulness, that in the French army, after the battle of Austerlitz, there were only 100 invalids in a division of 8000, or only one in 80.

Having thus sufficiently proved the influence of the mind upon the health, I proceed to point out the injuries resulting from the various forms of excessive mental labour and excitement.

The connexion between the brain and the stomach is of the most intimate kind; and hence the latter organ is

sure to be the first to be deranged by any disturbance of the functions of the former.* Mr. Abernethy, in his Lectures on Anatomy, Surgery, and Pathology, says, “there is no hurt of the head that does not affect the digestive organs.” A severe blow on the head is generally followed by vomiting and sickness: and, as I have already noticed, a sudden mental shock at once takes away the appetite and weakens the stomach. It is not surprising, therefore, that dyspepsia should be one of the most common forms of disease occasioned by undue excitement of the mind; and that some persons should be inclined to refer to the brain as the primary seat of most gastric complaints, and to ascribe but little comparative importance to diet.

The greater number of persons afflicted with dyspepsia are to be found among care-worn speculators, stock-

* In the last edition of my Treatise on the Ear, I have, by means of engravings, shewn the organs of sensation, with the distribution of their nerves from their origin to their termination, and also the great sympathetic nerve (which, going to most of the vital organs, sends off nervous filaments to the stomach likewise), exhibiting the semilunar ganglion and solar plexus, and their connexion with the organs of sight and hearing; many obscure diseases of which arise from derangements of the stomach and its nerves.

“The sympathetic nerve is almost universally supposed by anatomists and physiologists to be indispensable to the offices of secretion, nutrition, and circulation, and is also imagined to be the source of a multitude of diseases. Lobstein, in enumerating the *pathemata istius nervi essentialia*, includes in the list hypochondriasis, morbus hystericus, melancholia, mania, and febris intermittens.” — Dr. C. G. HOLLAND’S *Experimental Inquiry into the Laws of Life*, p. 218.

I may here mention the well-known fact, that perversion of the senses is very generally an accompaniment of mania, and furnishes an argument in favour of those who contend that in-

brokers, and ardent students, or among those whose nervous system has by injudicious education been too greatly developed, and rendered readily excitable. There can be no doubt that sedentary habits concur with mental excitement in producing this disease; but exercise derives much of its utility to them by determining the blood from the head to the extremities.

The numerous evils that flow from dyspepsia, that is, from imperfect nutrition, no one who has attentively read this book will be at a loss to perceive. An inadequate supply of blood must necessarily produce weakness in the whole body; and the brain itself, the original source of the malady, is not exempt from the disease to which it gives rise.

So long as excessive mental excitement is kept up, but little relief can be obtained by the strictest attention to dietetics. Abstinence from mental toil, cheerful com-

sanity is a disease of the brain. Dr. Thomson, in his Lectures on Medical Jurisprudence, observes, that "delusions connected with the organ of *hearing* are the constant accompaniments of mania. The conversations which Tasso held with his familiar spirit can be accounted for on this perverted condition of the faculty of hearing; and nothing is more common in most of the cases of mania. It is this state of the *ear* which often leads to suicide; the unfortunate victim of it imagining that he hears the devil tempting him to self-destruction. It is scarcely necessary to say, that the *eye* also is affected, and the hallucinations are usually connected with objects of sight. An illustration of this occurred in a patient who was long under my charge. He was the son of a distinguished dignitary of the church, and, although he had a complete belief that he was the King of Great Britain, yet he had as firm a conviction that his father was always seated at the window of an opposite house watching his movements. 'There,' would he say, 'sits the old boy; he does not think that I see him.'"

pany, a country excursion, and relaxation of mind, will soon accomplish a cure where all the dictetic precepts and medicines in the world would prove inefficacious.

Another form which disease occasioned by intense study and excitement sometimes assumes, is violent fever. The whole nervous system is affected, and, by too powerfully stimulating the heart and the entire circulation, induces inflammatory action. Of this there is a striking instance in Dr. Paris's Life of Sir Humphry Davy, who, in 1807, was reduced to the brink of the grave by the long-continued exertion and excitement attendant upon his discovery of the alkaline metals.

When such excitement is permanent, it often produces organic disease of the heart.

Hitherto we have spoken of the injuries inflicted on the rest of the body by deranged function of the brain: we have now to consider the injuries of the brain itself, as displayed in the mental aberrations; which may be divided into the two classes of hypochondriasis and insanity.

Hypochondriasis is described by M. Andral as follows: "The love of one's self, when exaggerated, proceeds to extreme attachment to life, and consequently to fear and horror of death: it is also the parent of hypochondriasis. This is the first form of the disease; but there is a second, which arises from the diminution of the sentiment of self-love, and thence results suicidal monomania.

"Hypochondriacs imagine themselves affected with diseases which they have not; or, if they have them, they exaggerate in their imaginations the extent to which they are so affected. A longer or shorter term after the invasion of the disease, the organs which are the seat of the real or pretended pains may become physically deranged."

It appears, however, that hypochondriasis, though sometimes occasioned by excessive mental exertion, is more frequently the result of a sudden alteration in mental

habits. M. Andral says, speaking of the causes, "We must place in the front rank the change in the functions of the brain which is produced by the substitution of a life of inactivity for one of occupation and mental exertion: next comes deficiency in the exercise of sensibility and movement—in a word, the abrupt cessation of the physical and moral habits. In this way we easily explain the hypochondriasis with which men of business are affected when they get rich enough to retire. It may happen that an individual may always have led such a life as never to have had his functions properly exercised: the brain cannot then attend sufficiently to external objects, but is exclusively occupied with the individual himself. Thus too sudden or complete a degree of isolation may produce hypochondriasis. Persons may be placed in circumstances which deprive them of the requisite portion of wants and desires, &c.; in consequence of which they become hypochondriacal, as we see among the rich."*

* For these interesting extracts, I am indebted to the last August number of the London Medical Gazette, in which a translation of the learned professor's lecture is printed.

The case of Miss Bagster is a striking example of the debilitating effects of great mental dependence and inaction; in this instance they were so remarkable as to give occasion to a verdict of lunacy. The following account of it is taken from Dr. Cummin's Twenty-fourth Lecture on Forensic Medicine.

"The young lady in question, who was about twenty-two years of age, at the time of her elopement and marriage, *had been a spoiled child from infancy*. She was an only daughter, and treated with a foolish fondness by her grandfather, from whom she was to inherit a very large property. She was brought up in a complete state of dependence on others; all her wishes were gratified without any exertion of mind on her part: she was taught nothing that could give her the least trouble or annoyance in the learning. The management of her temper was also neglected, and school-

Although my chief object is to shew the dangers of too great mental activity, yet I have quoted the above passage for the purpose of shewing that exercise is necessary to the preservation of the brain, as well as of every other organ ; and that, while excessive exertion is highly injurious, total inactivity is not less so. The duly regulated exercise of the mind is as essential to the health of the brain, as the exercise of the limbs is to that of the muscles : healthy exercise consists in calling into moderate action *all* the faculties of the mind : the continual

mistresses and governesses could abundantly testify to various unseemly ebullitions which they had witnessed.

“ In this state of things, though she cannot be said to have ever arrived at years of discretion, she attained her majority, became legally the mistress of herself and her property, had her speculations of marriage on hand, and was persuaded by one of her suitors to elope with him.”

The match being disapproved of by the lady's relatives, they resolved to annul it, by proving her *non compos mentis* ; and proceedings for that purpose were forthwith commenced, and terminated in the desired verdict : although several of the medical witnesses examined expressed their decided opinion, that *ignorance*, and not *incapacity*, was the cause of those strange actions on which the verdict was founded. Dr. Alexander Morrison, physician to the Bethlehem Hospital, declared that “ deficiency of education will account for all the appearances observed in Miss Bagster. Her incompetency to manage her affairs arises, not from unsoundness of mind, but from ignoranec. She is capable of instruction, so as to be able to manage her affairs. The indulgence of her grandfather, the conduct of her mother towards her, and the frequent change of her teachers, were calculated to produce the results which we see.”

Such a case as this strongly illustrates the necessity for a well-directed moral and intellectual education ; and the folly of those who, from an injudicious indulgence of the young, suffer them to grow up untrained and unrestrained.

contemplation of one subject, by exerting a few faculties only, leaving the others unemployed, is one of the most likely means of producing hypochondriasis.

These considerations are sufficient to prove that long-continued retirement from the world, and from the society of our fellow-men, is not the sphere for which we are destined. In such a condition there is nothing to exercise those social feelings which we possess; nor are there many calls upon our intellectual powers; and hence it might *à priori* be expected to give rise to hypochondriasis. We need not be surprised, therefore, when we are informed that the monks in primitive times, whose lives were consumed in penance and solitude, were sometimes relieved from the painful struggles of disease and despair by madness or death; and that many of them committed suicide.*

But while the want of objects on which to exercise the mind appears to be the chief cause of the first form of hypochondriasis, the undue excitement of the passions is in most cases the origin of the sentiment opposed to the love of life, and of its preservation, which is denominated "suicidal monomania."

M. Andral states, that according to a table formed by M. Falret of the suicides which took place in France between 1797 and 1823, the following results appear: Of 6782 cases, 254 were from disappointed love; 92 were from jealousy; 125 from the chagrin produced by having been calumniated; 49 from the desire, without the means, of vindicating their characters; 122 from disappointed ambition; 322 from reverses of fortune; 16 from wounded vanity; 155 from gambling; 287 from crime and remorse; 728 from domestic distress; 905 from poverty; 16 from fanaticism. In towns the cases are much more frequent than in the country, where, indeed, very few are met with;

* Gibbon, Decline and Fall, chap. 37.

and this may be easily understood, when we consider how much our great cities become theatres in which all the passions are developed.

It is a striking fact, that in France, Germany, and England, the countries that are most distinguished for their intellectual activity, the number of suicides is greater than in any other countries.

When mental disease is limited in its extent, when the perceptions and ideas are deranged only in reference to one or a few subjects, it is termed monomania: it is a mitigated form of insanity. Speaking of it, Dr. A. T. Thomson says, "In this form of the disease, when the delirium returns at intervals, instead of running on in the same strain day and night, the paroxysms appear periodically; at other times the individuals seem reasonable, save when conversing on subjects within the sphere of their delirium; and it is in vain to endeavour to perceive their insanity, unless we accidentally, or intentionally (if we are aware of the subject of their delusion) touch upon the chord of the mind which is unstrung. In many instances, however, this species of the disease is connected with the same irregular, often-desponding condition of mind which exists in moral insanity. In others, nothing of the kind is perceptible. A case which occurred in the Prerogative Court of Canterbury is illustrative of this fact.

"The individual in question was a sensible, clever man, amassed a considerable fortune by his profession, took good care of his property, and conducted himself so well in general, that several of his friends and acquaintances, some of them medical persons, never even suspected that he was deranged in mind. He was, however, a man of violent and irritable temper; and his insanity turned on a high notion of parental authority. He had an amiable and accomplished daughter, dutiful, modest, virtuous, affectionate, moral, and religious. This girl he was in the

habit of tying to the bed-post, flogging her with unmerciful severity, applying brine to the wounds, pulling her hair out by the roots, and compelling her to perform the meanest drudgery. Although this person was capable of managing his affairs, yet he was properly declared to be *non compos mentis*.”*

We come now to the subject of insanity.

Leaving out of view, for the present, the numerous cases of insanity arising from hereditary predisposition (and this predisposition must have had its origin in the ill-regulated minds of persons in previous generations), the almost only remaining cause of that fearful disease is excessive mental toil and excitement. It is by far most prevalent in those countries where there is the greatest freedom of institutions, the most commercial enterprise, and the highest intellectual activity. According to the most recent estimates, there is in

France	one insane person to	-	1000
Wales	-	-	800
England	-	-	782
Scotland	-	-	574
Prussian provinces on the Rhine			666

Respecting the United States, our information on this subject is exceedingly imperfect and scanty: in only a few States has any attempt been made to ascertain the number of the insane; and in those few cases where they have, the returns are far from being perfect. According, however, to reports made for the States of New York, Connecticut, Massachusetts, New Hampshire, and Vermont, the average proportion of insane and idiots is one in about 500.

It is supposed that the proportion here given is considerably less than the true one; but as there is no country in which complete accounts of the number of the insane

* Lancet, March 18th, 1837.

are extant, it will serve for the purposes of comparison with other nations.

“ Travellers inform us that madness is an uncommon disease in Russia, and that it prevails more in the large towns than among the peasantry. There is but little in Spain and Portugal: a few years since, the hospital for lunatics at Madrid contained but sixty patients; and that at Cadiz only fifty. According to M. Briere, who has recently visited the lunatic asylums of Italy, only one case of insanity is found to 4879 of the population. The inhabitants of China appear to be nearly exempt from this disease. Dr. Scott, who accompanied Lord Macartney in his embassy to that country, heard of only one instance. It is uncommon in Persia, Hindostan, and Turkey. Dr. Madden, in his travels in Turkey, after remarking that, in countries where the intellect is most cultivated, there insanity is most frequent, adds, ‘ there is no nation where madness is so rare as in Turkey, where the people of all others think the least.’”*

All travellers concur in stating that insanity is almost unknown in savage and barbarous nations; and it appears to be nearly as rare among negro slaves in the West Indies and America. It is evident, therefore, that the ultimate cause of every case of insanity that occurs among us is mental excitement; the evils inflicted by which are often so deeply implanted as to affect a long line of descendants; and which ought therefore to be the more carefully guarded against.

The agitation of any great political measure, the excitement of revolutions and changes, are invariably followed by numerous cases of insanity. Esquirol says it was frightfully increased during the first French Revolution; that even women, strongly affected by the events of

* North American Review, No. 94.

that exciting time, bore children whom the slightest cause rendered insane. "So great," he in another place says, "has been the influence of our political commotions, that I could give the history of France from the taking of the Bastille to the last appearance of Buonaparte, by that of the insane in the hospitals, whose delusions related to the different events of that long period of history."

It is the general opinion of persons who have paid attention to the subject, that insanity is on the increase in those countries where it is already most common; and this is exceedingly probable, since it is a malady more frequently transmitted than perhaps any other; and the sources of excitement are by no means becoming fewer, or less extensive in their operation. Persons who inherit a predisposition to this dire disease have, of course, more to fear from excitement than others; and they ought to be studiously careful to avoid whatever may tend to rouse their passions, or require great mental exertion.*

And here I may revert to a subject into which I have already entered at some length—the effect of early mental culture. If, as we have seen, whatever unduly excites the mind, has a tendency to produce insanity—and if the excitability depends greatly upon the condition of the nervous system, it must be evident that the premature development of the brain, which, as I have elsewhere shewn, weakens and renders it highly irritable, and which is almost universal in America, and is by far too common

* "The hereditary tendency to insanity is more general among the opulent than the poorer classes of society. M. Esquirol ascertained, that in the Salpêtrière, out of 351 cases of common people, 105 only had the disease by inheritance; whilst in 264 cases of opulent patients, 150 were hereditary."—PROF. THOMSON'S *Twenty-fourth Lecture on Medical Jurisprudence, given in the Lancet.*

in this country, must largely contribute to the spread of insanity. The training of the young, however, must not consist in merely allowing the faculties of their minds to develop gradually — it must be of a positive kind, and be directed in the first years of life to the due regulation of the passions. In Dr. Pritchard's *Treatise on Insanity*, he makes the following excellent remarks on education: "There are two different points of view under which the injurious effects of wrong education may be considered. By too great indulgence, and a want of moral discipline, the passions acquire greater power, and a character is formed subject to caprice and to violent emotions: a predisposition to insanity is thus laid in the temper and moral affections of the individual. The exciting causes of madness have greater influence on persons of such habits than on those whose feelings are regulated. An overstrained and premature exercise of the intellectual powers is likewise a fault of education, which predisposes to insanity, as it does also to other diseases of the brain."

Before I quit the subject of mental excitement, I will make a few observations on one cause of that evil which I have not yet mentioned: it is the improper choice of a profession.

Parents and friends too often forget, that in determining the future pursuits of the young under their care, it is not enough that a profession be respectable or lucrative, or that it be one in which the youth may be expected to succeed by means of family influence; in addition to these circumstances, they ought to take into account the talents, the disposition, the natural bent of the mind of the individual immediately concerned; for if this most important item be omitted in their calculations, the probability is, that if he have any individuality of character, they will seriously obstruct his happiness while endeavouring to the utmost of their power to promote it.

What can exceed the wretchedness of the man compelled by such mistaken kindness to engage in a profession requiring the constant exercise of faculties which he possesses in a very limited degree? He passes scarcely a day without having the conviction of his unfitness for the performance of his duties forced painfully upon his mind;—and what deep humiliation must there be in that conviction! what constant anxiety and apprehension of the discovery of his incompetency—and what despair and misery should the discovery be made!

The injury thus inflicted upon the mind and health is incalculable; and often is the consequence premature death—suicide even. It is therefore obviously the duty of parents and guardians, previously to fixing the destination of the young, to ascertain, as far as is possible, their fitness for the intended employment. And this is by no means so arduous a task as might at first sight be supposed. A few observations may assist in the performance of it.

First, then, every vocation requires for its successful exercise certain physical qualifications—qualifications that may be comparatively unimportant to members of other professions, but essential to those of each particular profession. It might have been supposed that this truth, at least, would not be neglected—inasmuch as no abstruse analysis or patient observation is needed to ascertain in any given case whether the requisite physical qualifications are possessed in the necessary measure. And yet we frequently see men whom nature intended for tailors at the anvil, and blacksmiths on the shop-board; persons of active frame and sanguine temperament confined at a sedentary employment; and those whose bodies and minds are formed for quiet, tranquil labours sent forth to encounter the terrors of the ocean. And often, indeed, in that most fitting place for the exercise of the noblest elo-

quence, the pulpit, do we find men who, by their defective, unharmonious utterance, would deprive of all their force the soul-stirring outpourings of a Demosthenes or of a Cicero.

The mental qualifications of an individual may generally be accurately determined by parents and teachers. A little observation will certainly reveal the leading tendencies of his mind; and it will be found that these tendencies indicate his predominant talents or faculties; and hence they ought, as a general rule, to be taken as guides in the choice of a profession. Seldom, however, are they sought for, or, even if they openly manifest themselves, attended to: the considerations that determine an individual's sphere of action are of every kind except the right; and it is not always that the mistakes by this means made end so happily for the subjects of them as in the following case. The anecdote was current at the hospital at Haslar many years ago.

A gentleman having a son, whom his mother had cherished the hope of seeing arrive at distinction in the navy, in compliance with her desire, sent him to sea as a midshipman under the care of a relative. Shortly afterwards an engagement took place, and the boy, who was very young, was much terrified, and during the action hid himself in the ship's copper, where he was discovered by the men, who reported him to the officer on duty; and as soon as the ship returned home, the admiral dismissed him and sent him to his father; who, instead of reproving him, observed that he had displayed a good deal of cunning, and though unfit for a sailor, would most likely make an admirable lawyer!

The important influence which the choice of a profession exerts over their future condition should make parents especially careful to place their offspring in situations for which their temperament and aptitude fit them. Not only

will the happiness of individuals, but the good of the community, be thereby promoted ; for if men's attention is devoted to subjects for which they have a natural aptitude, there is a much greater probability of arriving at a profound knowledge of them. And the same result is obtained in a still higher degree when men pay exclusive attention to a single congenial department of science or art.* The division of labour, which has effected so much for the manufactures of this country, has been productive of scarcely less good in the higher walks of the law and the medical profession. In the latter, in particular, its results have been of the most valuable kind ; diseases formerly incurable are now disposed of readily ; and organs whose delicacy deterred the practitioners of former times from operating upon them, are now treated with as much safety and success as the strongest.

That great advantages accrue to the public from the division of medical labour, I have shewn in several of my former works, and it is well exemplified in the establishment of the Royal Dispensary for Diseases of the Ear, which I founded in 1816, with the assistance of Sir Walter Farquhar, Dr. Baillie, and Mr. Cline. Its usefulness and advantages are well known to the public ; and they have not been obtained without much labour and attention. For twenty years I have attended exclusively to the treatment of diseases of the ear, during which period I have been the means of affording relief to many thousands of my fellow-creatures. I have published a Map of the Anatomy of the Ear ; and a Synoptical Chart of its various Diseases, with their treatment, in order that the advantages of my extensive experience may be as widely diffused as possible. These Maps and Charts I have lately presented to the different Sovereigns of Europe and to the

* Vide Foster's Essay on Decision of Character.

American Government through their ambassadors in this country ; and I have the satisfaction of knowing, from letters I have received from His Excellency Mustapha Reshid Bey Effendi, Ambassador of the Sublime Porte, Baron Bulow the Prussian Ambassador, Count Seckendorff, and Baron Altenstein, Minister of Public Instruction and Medical Affairs of Berlin, Baron Moncorvo, the Portuguese Ambassador, the American Minister, &c. &c., that they have been justly appreciated. It appears that in America diseases of the ear are still but imperfectly understood.*

Finding that the diseases of the ear are often connected with those of the eye, I have recently attended to that organ, and I may say with the happiest results. For much useful information on this subject, vide the second edition of my Treatise on the Eye.

It may not be unacceptable to my readers to make a few observations on the effects of some of the more liberal professions upon the health.

Naval officers are exposed to great and rapid changes of climate, and to many endemical diseases, such as the yellow fever in the West Indies, and liver complaints in the East. But those more fearful diseases which were formerly so rife on ship-board, and which arose from ignorance or neglect of the necessary preventive measures, are now, owing to the introduction of a better system of administration, almost unknown ; and there are few professions more favourable to the health than that of guiding and controlling the "wooden walls of old England." †

* Vide North American Review.

† During the late war, I was employed for nearly six years at His Majesty's Royal Naval Hospital at Haslar, which is one of the largest in Europe, and contained at one time 2,000 patients. None are better regulated, or have had more operations per-

The military profession is one which frequently subjects its members to great and long-continued hardships; and in so far it is unfavourable to health. But when in garrison, or not engaged in actual service, soldiers are placed in easy circumstances, and but for the abuse of leisure, might enjoy excellent health. Military officers are often inactive, spending their time in-doors, and also living luxuriously. But old officers are generally extremely careful of their health; and, being free from anxiety and care, frequently reach to a very old age.

The profession of the law in its higher grades is one which demands great and constant mental exertion—which is too often combined with almost total muscular inactivity; the consequences of which, having been already sufficiently expounded, need not here be repeated. But I would recommend all persons who devote themselves to close study, of whatever kind, to take regular exercise in the open air, to be abstemious in diet, to avoid low desks and soft seats, not to study late at night, nor too long at a time; and if the subject of attention be sometimes changed, so much the better.

The clerical profession, in its relation to health, has many points of resemblance with that of the law. The lungs of clergymen are frequently injured by excessive exertion, and become the seat of fatal diseases. Persons having delicate lungs should hesitate before they enter any profession requiring great exercise of those organs; and, having entered it, should carefully abstain from long or vehement discoursing.

The members of the medical profession are exposed to

formed in them. Among the many eminent men who have served there may be named Drs. Lynn, Babington, Sir R. Hunter, Johnson, Weatherhead, James Clarke, Thomson, Messrs. Vance, P. N. Scott, Price, &c.

many morbid influences, from which other classes of the community are exempt; and, in endeavouring to preserve the lives of others, often sacrifice their own: *aliis inserviando consumantur, aliis medendo moriuntur*. Mr. Thackrah seems to be of opinion, that the mortality among medical students is great,* and dissents from Ramazzini, who says, that medical practitioners are comparatively free from ordinary diseases, in consequence of their good exercise, and their hilarity of mind when they go home with their fees in their pockets, “*Dum bene nummati, lares suos repetunt.*”

Those who enter this profession should be persons of somewhat robust frames and strong constitutions; since there can be no doubt that it is one requiring great bodily as well as mental exertion.

The musical profession, in its two departments, vocal and instrumental, is one which, in this country at least, is unfavourable to longevity. Its members are subjected to many unhealthy influences, and in particular to great anxiety and care, from the caprice and whims of their hearers. “Singers and persons who play much on wind instruments are subject to pains in the chest, diseases of the larynx, œdema of the glottis, pulmonary emphysema, and spitting of blood.”†

From the latter class of evils performers on stringed instruments are in a great measure free; and it is no unusual sight to see greyheaded veterans gaily pursuing their harmonious vocation. For instance, Mr. Lindley (the incomparable violoncellist), and Dragonetti (the able

* In a note he observes, “Voltaire has remarked that among centenarians, not one was from the faculty of medicine; and that the King of France had interred forty of his physicians.”

† Thackrah, p. 174.

performer on the tenor violoncello), are both elderly men ; while Mr. Nicholson, the late celebrated flute-player, died a short time ago at a comparatively early age.

Vocalists are frequently afflicted by the nervous affection called "globus hystericus," which completely prevents utterance ; this affection, like all other nervous ones, may often be avoided by attention to the general health, and by abstaining from excesses of every kind.*

But it is time to return from this digression to the subject from which it has led us.

Having shewn the bad effects of mental excitement, it may add to the force of those statements to shew the contrary—the beneficial effects of mental tranquillity and relaxation.

I have in several parts of this book noticed the healthful influence of a cheerful, well-regulated frame of mind upon the various functions of the economy ; and this is owing to the quality of the nervous fluid, which is, as we have seen, so much dependent upon the mental state. If, then, this frame of mind be habitual—if no violent passions disturb its serenity—if it be free from the vexatious cares of public life and of party—it must conduce to lengthen life, and to promote human happiness.

We may refer to the Society of Friends as a proof of

* The musical profession is often accused of unwillingness to devote their services occasionally to the cause of charity ; but this accusation is by no means supported by fact. On several occasions many of its most distinguished members, both foreign and English, have gratuitously performed for the Royal Dispensary for Diseases of the Ear, which, indeed, may be thought to have a peculiar claim upon them, inasmuch as the object of its care is the organ whose office it is to convey to the mind the perceptions of harmony. Among these we may mention the inimitable Paganini.

the truth of these assertions. As a body, they are temperate and industrious, quiet and unobtrusive; their lives appear to flow on in a calm, unruffled stream, and are consequently of longer duration than those of any other extensive class of the community, as appears from the annexed statement, which was published a year or two ago.

“Inquiry has been made by the Society of Friends throughout England as to the average length of life of persons belonging to their society, as compared with that of other individuals. The result is generally highly favourable to the superior longevity of Quakers; but in Chesterfield particularly so, as the following plainly shews: the good effects of living with temperance and frugality could not be more clearly demonstrated. United ages of 100 successive burials in Chesterfield churchyard, ending 16th November 1834, 2516 years 6 months; which gives an average of 25 years 2 months: two of these persons reached the age of 80 and upwards; and 12 reached the age of 70 and upwards. United ages of 100 successive burials of members of the Society of Friends in Chesterfield monthly meeting, ending 27th November 1834, 4790 years 7 months; which gives an average of 47 years 10 months: 19 reached the age of 80 and upwards, and 30 reached the age of 70 and upwards.” So that, in this particular locality at least, the balance is nearly two to one in favour of the Quakers.*

But many persons will doubtless be ready to exclaim, that it is impossible to preserve a state of equanimity amid the bustle of business and the contentions of society. There is truth in the objection; and I am far from think-

* The author's relatives were all Quakers. When he was twelve years old, he had living, and in good health, two grandfathers, two grandmothers, his mother, and his father, the late Dr. John Curtis, who died not long since, at an advanced age.

ing that, as society is at present constituted, men can place themselves in strict conformity to the laws of nature. Still, there is much unnecessary agitation and excitement;* and, by pointing out their evils, I shall perhaps induce some persons to reduce them to their minimum amount.

As an antidote to the residuum, I earnestly recommend frequent mental relaxation, and a participation in innocent pleasures. A short trip into the country, even for a single day, is exceedingly beneficial, by diverting the mind from the ordinary objects of contemplation, and by removing from it for a little time that load of anxious cares, which, if suffered too long to remain, destroys its elasticity. And at least once a-year a jaunt of a week or two should be taken by every one who can manage to do so: the communications by land and water to every part of this country are now so abundant and so economical, that there are few indeed who could not afford it if they wished; and in the end it would probably be the means of saving a larger sum, by promoting the health, and enabling men to engage in the various occupations of life with greater energy. For a few pounds a person may visit the mountains and lochs

* Much of the political discussion so prevalent in this country is certainly of this kind. How many hot-headed persons are there who are in a state of constant excitement upon matters of the most trifling moment—who throw themselves into a fever in discussing a subject which concerns no one! The *media via* of politics, neither indifference nor partisanship, is the best, both for the health of individuals and the general good. It is to be regretted that men, while striving, as they imagine, to promote the prosperity of their country, should so much injure their own happiness; and I am happy to find that many are of my opinion. I am glad to observe that the dissensions of parties are so much less acrimonious than they formerly were, and that political opponents shew so much more consideration for the feelings of one another.

of Scotland, or the picturesque scenes which abound in the Emerald Isle — and inhale strength and vigour from the ocean's breeze; he may store his mind with the recollection of the beauties of nature, and of the various pleasing occurrences that befel him, while absent from home; and in the midst of the crowded city, and of pressing occupations, he may often relieve and amuse his harassed mind by the contemplation of these intellectual images.

Some time ago I was labouring under the effects of too severe application to professional pursuits; and my medical friends advised me to visit Aix la Chapelle and Spa. I did so; and so great was the relief which I experienced from the pleasure of travelling, and change of scene and occupation, that four days after I arrived at the latter place I was perfectly well.

To shew the rapidity of our communications with the Continent, I may mention that I left London in the steam-boat on Saturday morning, and reached Ostend the same night; and the next day proceeded to Brussels, where I arrived in the evening; and next morning I set off early, and entered Aix that night; so that the whole journey was performed in three days, and that, too, comfortably and pleasantly.

The weekly cessation from the toils of business, which is generally observed in Christian countries on the first day of the week, is a practice at least as conducive to the welfare of the body as of the soul; and it is one which will be more inviolably kept, when men become better acquainted with the conditions on which their health depends. Nothing could be more inexpedient, as regards the present interests of mankind, than the abandonment of this practice, viewing it as a matter of political economy; for there can be no doubt that the capacity for labour is increased by occasional rest from it; and that if every day in the year were devoted to labour, the produce of that labour would be less than it is at present.

If the time thus rescued from labour were made the best possible use of, how much might it not effect for the mental and bodily improvement of mankind! It affords an opportunity for intellectual, moral, and physical training, which has not yet been turned to the best advantage.

“ In conclusion, we hope there is a class of people in this country, and that an increasing class, one destined to be the most numerous, who seek enjoyment in the tranquil occupations of life, in such pursuits as those of agriculture, and the study of natural history; who are not ashamed to labour with their own hands, and unite, in due proportion, exercise of body and of mind; who, contented with their stations in society, and with a competency, are not perpetually striving for office or wealth. To this course we advise others, for we know not how life can be better spent, or more happiness realised. We hope to see a love of literature and of science increase in this class. All labour of body is not proper; the mind requires exercise also; but it does not require constant excitement, any more than the body does alcoholic drinks. The agriculturist, with a good farm, and well-selected library, (and books are now so cheap, that most persons can afford such,) is supplied with the essential materials for rational enjoyment. A part of his time judiciously devoted to labour makes him as independent of others as is desirable; while a portion of his leisure passed with books elevates, purifies, and improves his intellect; and thus he secures to himself health of body and mind.”*

I shall close this chapter with some miscellaneous observations.

And here, the first thing that claims our attention, from its important influence upon health and longevity, is marriage.

There can be no doubt that the matrimonial state,

* North American Review, No. 94, pp. 120, 121.

when entered into at the proper time, and between suitable parties, is conducive to health. It is a state for which man is formed, and in entering into which, therefore, he obeys the organic and moral laws—disobedience to which, as we have shewn, must inevitably be attended with evil of some kind or other.

Sir John Sinclair informs us that by far the greater proportion of those who have attained old age were married; and that out of 127 aged people, who were pensioners in the hospitals of Greenwich and Kilmainham, there were only thirteen bachelors.

That the marriage state is favourable to mental as well as to bodily health, is strongly shewn by the fact noticed in the lecture of M. Andral from which I have already quoted: viz. that in France two-thirds of the suicides are among bachelors; and he adds, that the same remark has been made in this country.*

But “to make marriages answer the purpose of health, and the other objects to be kept in view in the connubial state, there ought to be a parity of station, a similarity of temper, and no material disproportion in years. It is owing to the want of some of these most essential requisites, that the married state proves so often the source of misery, instead of joy and comfort.”†

* While on the subject of marriage, we may notice the abounding of prostitution—a fact to be deeply lamented, both on moral and physical grounds. But the Parisians are far worse in this respect than the inhabitants of this metropolis; for it appears that “in 1835, in Paris, 9,637 boys, and 9,207 girls, were born in wedlock in private houses, and out of wedlock, 2,747 boys and 2,669 girls. In hospitals, the lawfals amounted to 283 boys, and 234 girls; and the illegitimates to 2,237 boys and 2,207 girls; more than one-third of the births being thus out of wedlock. 2,459 of these, however, were recognised by parents.”—*Literary Gazette*.

† Code of Health.

The opinions of physiologists as to the earliest age at which the contraction of marriage in this country is advisable, are various—some fixing it for the male at the age of 21; others at 25; and others even at 28: but most writers on the subject agree in regarding the 18th year of the female the earliest at which it ought to take place. This, however, is a point which must depend upon a great variety of circumstances; and though marriages contracted while the frame is still rapidly developing are undoubtedly often injurious, yet varieties in constitution are so numerous and so great, that it is impossible to lay down a rule universally applicable. It may, however, be regarded as certain that marriages on the part of males before the age of 21 are hurtful, and ought not to be entered into.

If we regard marriages as they affect the offspring of them, we must take into account many circumstances which do not affect the health of the parties marrying.

It appears to be a law of nature, that frequent intermarriages among a particular family, class, or nation, have a tendency to produce mental and bodily degeneracy; and the more limited the circle to which they are confined, the greater is the degeneracy. This accounts for the fact that the children of cousins, or other near relations, are so often weak in intellect—and sometimes even idiotic. It is well known that idiocy is by no means rare in some of the noble and royal families of Spain and Portugal, among which the practice of marrying nieces and cousins prevails.

The predominant states of mind of the mother during the period of gestation seem to exercise great influence on the character, bodily and mental, of the child. If such be the case, the following advice, given by the Margravine of Anspach in her *Memoirs*, deserves serious attention: “When a female is likely to become a mother, she ought to be doubly careful of her temper; and in particular, to

indulge no ideas that are not cheerful, and no sentiments that are not kind. Such is the connexion between the mind and body, that the features of the face are commonly moulded into an expression of the internal disposition; and is it not natural to think that an infant, before it is born, may be affected by the temper of its mother?''*

If the transmission of mental qualities may still be somewhat open to doubt, there is the strongest proof that physical qualities are in most cases communicated; and therefore, as "respects persons seriously deformed, or in any way constitutionally enfeebled—the rickety and club-

* I cannot refrain from quoting the following excellent remarks on this subject from Dr. Caldwell's Treatise on Physical Education: "The avoidance by females, while pregnant, of every thing that might injure them cannot be too strict. Nor is this all. They should take more exercise in the open air than they usually do. The feeling which induces many of them to shut themselves up in their rooms for weeks and months before parturition, is an excess of delicacy—were the term less exceptionable, I would say, false delicacy—and ought not to be indulged. Their food should be wholesome, nourishing, and easy of digestion, and should be taken in quantities sufficient to give them their entire strength, and maintain all their functions in full vigour. Their minds ought to be kept in a state of tranquillity. In a particular manner, the effects of frightful appearances, alarming accidents, and agitating and impassioned tales and narratives, should be carefully guarded against by them. The blighting operation of the "Reign of Terror," in Paris, on the children born during that period, furnishes fearful evidence of the influence of the distracted and horrified condition of the mother over the system of the unborn infant. An unusual number of them was stillborn. Of those who were not so, a number equally uncommon died at an early age; and of those who attained adult life, an unusual proportion were subject to epilepsy madness, or some other form of cerebral disease."

footed, for instance, and those with distorted spines, or who are predisposed to insanity, scrofula, pulmonary consumption, gout, or epilepsy—all persons of this description should conscientiously abstain from matrimony. In a special manner, where both the male and female labour under a hereditary taint, they should make it a part of their duty to God and their posterity never to be thus united. Marriage in such individuals cannot be defended on moral grounds—much less on that of public usefulness. It is selfish to an extent but little short of crime. Its abandonment or prevention would tend, in a high degree, to the improvement of mankind.”*

On the use of tobacco a few remarks may here be made.

Tobacco belongs to the class of drugs called narcotics, and is possessed of many of their most noxious qualities. The excessive use of tobacco, in whatever shape it is taken, heats the blood, hurts digestion, wastes the fluids, and relaxes the nerves.

Smoking is particularly injurious to lean, hectic, and hypochondriacal persons: it creates an unnatural thirst, leading to the use of spirituous liquors; it increases indolence, and confirms the lazy in the habits they have acquired; above all, it is pernicious to the young, laying the foundation of future misery. I am therefore glad to see that our young men have very generally abandoned the obnoxious and unbecoming custom, lately so prevalent, of smoking in the street.

A patient of mine, a young officer of dragoons, who was quite an amateur smoker, and used to boast of the number of cigars he could smoke in a day, produced ptyalism by his folly; and had he not abandoned the

* Thoughts on the true mode of improving the condition of man. By Charles Caldwell, M.D.

practice, he would in all probability have lived but a very short time.

The use of tobacco in the form of snuff is still more objectionable than smoking. On account of its narcotic quality, snuff is improper in cases of apoplexy, lethargy, deafness, and other diseases of the head. The use of snuff is likewise extremely dangerous to the consumptive, to those afflicted with internal ulcers, or who are subject to spitting of blood.

Snuff-taking is an uncleanly habit—it vitiates the organs of smell; taints the breath; ultimately weakens the faculty of sight, by withdrawing the humours from the eyes; impairs the sense of hearing; renders breathing difficult; depraves the appetite; and, if taken too copiously, gets into and affects the stomach, injuring in a high degree the organs of digestion.*

Nothing conduces more to enjoyment than the perfect exercise of the functions of hearing and sight; but, as I have fully treated these subjects in my two works on the Physiology and Pathology of the Ear and Eye, containing remarks on the use of acoustic and optical instruments—and in my works entitled “Observations on the Preservation of Hearing and Sight,”—it is not necessary for me to enlarge upon them here. I shall, however, take this opportunity to animadvert upon some statements in a work recently published, “The Philosophy of Living,” from which I am compelled to dissent. The first of these is, that “the best instrument for conversation with a single person is the ear-trumpet with an elastic tube.” Now, in my Treatise on the Ear, 6th edition, p. 178, the advantages of my acoustic chair are described as follows: “One of the greatest advantages possessed by my chair consists in this,

* Sir J. Sinclair's Code of Health.

that the person sitting in it hears at the opposite side from that at which he is addressed ; thus avoiding the unpleasant and injurious practice of the speaker coming so close as to render his breath offensive, and at the same time detrimental to the organ of hearing, by causing a relaxation of the membrane of the tympanum. This is an effect commonly produced by the use of short flexible tubes, no less than by hearing-trumpets, which latter are as often, perhaps, employed for *speaking* through, as for the purpose for which they were designed ; and it is a certain fact that many persons, after having used a trumpet for half an hour, are quite deaf, from the action of the breath impelled against the membrana tympani."

This passage contains all that it is necessary to say in answer to Mr. Mayo's recommendation of short flexible hearing-tubes: and I shall now pass to the examination of some of his observations on instruments for the preservation of sight.

In his choice of these, Mr. Mayo is equally unfortunate. He, it seems, has invented grey glass spectacles, "of a pure black diluted," which he appears to think far superior to any previously in use ; and in particular, to be free from the inconvenience of heating the eyes, which, he asserts, attends wire-gauze spectacles. Now I do not intend either to deny or confirm this assertion ; but, supposing it to be correct, Mr. Mayo has been most unhappy in his choice of a remedy. Is he ignorant that opticians bring the very same objection against his "grey spectacles?" and indeed who does not know that black glass, in all its shades, concentrates and absorbs heat? All coloured glass is bad—white is in all cases to be preferred.

Wire-gauze spectacles have been found to answer the purpose of protecting the eyes from dust, wind, and sun, better than any other hitherto invented. They were laid before the members of the Royal Society, and other scien-

tific institutions; an account of their exhibition may also be seen in the *Literary Gazette*, in which journal they are recommended.

They are made convex, in order that the eye-lashes may not come in contact with the wire, which sometimes happens with linen and other gauze spectacles.

They have, the manufacturer informs me, received the approbation of his Majesty, who has ordered two pairs; and of the Emperor of Russia, who has purchased three dozen pairs, and constantly uses them in his journeys over the plains of snow.

The only *serious objection* I have heard advanced against convex wire spectacles is that preferred by some opticians—viz. that there is but little profit to be made by the sale of them. I have no doubt that this objection is quite incapable of removal by argument; and I must therefore content myself with quoting the pithy saying of the currier in the fable, “There is nothing like leather.”

With one other observation I will conclude this subject—namely, that neatness and elegance appear to be more regarded in the choice of spectacles than any more useful qualities. Spectacles to be of service ought to be sufficiently large to cover the eye and take in the whole object. The large old-fashioned round spectacles, such as our grandmothers wore, are the most useful; though I have been informed by an optician, that he cannot make them small enough for the taste of his customers. Many persons seriously injure their eyes by looking at the frames.*

* I have lately invented periscopic glasses for the short-sighted, which have been much approved, and also large round periscopic glasses for the first, second, and third sight, for reading and writing with. These glasses may be obtained of Messrs. J. and

I wind up this chapter by observing, that the period of maturity is the only one which admits of prolongation. Infancy, childhood, and youth, have each certain limits, which are seldom come short of or exceeded: in a given number of years the human being arrives at the highest development of which it is capable, and art can do but little to hasten or retard the arrival of that epoch: so it is with old age—it cannot endure beyond a certain time, but speedily leads to the grave. The period of manhood—the period in which all the powers, both mental and bodily, are in the highest perfection, is alone capable of extension; and it is so capable, almost indefinitely. What a strong motive does not this consideration afford for taking care of the health—for studying the natural laws, on which health depends—and for, as far as possible, putting ourselves in conformity with those laws! And how clearly does this shew that longevity is a good—a real, substantial good—the attainment of which is well worth some striving for—the possession of which must contribute largely to happiness!

T. Dixey, Old Bond-street, and of Mr. Dollond, St. Paul's Churchyard, Opticians to his Majesty.

My instruments for assisting hearing and sight, including the keraphonites, or improved ear-cornets, the otisole, and also my spectacles for strabismus, and the wire-gauze spectacles, are manufactured by Messrs. Philp and Wicker (late Savigny), St. James-street, and by Mr. Maw, Aldersgate-street, surgical and acoustic instrument maker to the Royal Dispensary for Diseases of the Ear.

For much information regarding spectacles, vide the works of Sir D. Brewster, and of Drs. Young and Wollaston.

CHAPTER IV.

OLD AGE.

THOUGH the arrival of old age may, by attention to the natural laws, be long deferred, yet it is inevitable. Sooner or later the signs of decaying vitality appear; and, constantly increasing in number and force, they speedily prepare men for tenantry the grave.

This is a critical period—one in which the slightest error or misfortune may extinguish the feeble spark of life, and one, therefore, in which the greatest care is necessary. It will be my object to furnish such general rules as may enable those who have reached old age to enjoy it as long as possible, and to guard against whatever might endanger their safety; for though thus precarious, the existence of the aged may yet by proper attention be rendered so comfortable and happy, that it is still worth some pains to preserve it; and indeed to many this period of life is that in which the largest amount of the truest happiness is experienced.

Extremes meet. The physiological condition of the infant and that of the aged are in many respects alike. The organs of the infant are yet undeveloped, or have not yet acquired strength; those of the aged have either decayed wholly away, or have lost their former vigour: the result is identical; and hence the treatment of the young is in many cases suitable for the old.

But there are also important differences between the two extreme periods of life. The period of infancy is one of rapid growth, of great vital and nervous energy; that

of old age, on the contrary, is one of decay, in which all the functions are slow, the circulation of the blood is carried on languidly, digestion proceeds with difficulty, the mind loses its acuteness, the senses their vigour. While the characteristics of infancy mark it distinctly as one of increase and progression, those of old age plainly declare it to be the last act of man's eventful history.

These physiological differences render needful corresponding changes of treatment.

And first as to food.

The organs of mastication are imperfect, or wholly wanting, in both the extreme periods of life; in both, the digestive organs are weak and liable to derangements. Hence most of the rules laid down as to the diet of the young are applicable here.

“Broths and other liquid food, with sufficient farinaceous matter, should be taken by the aged. Every assistance which art can give towards increasing the masticability of food ought to be resorted to; and all the nourishment taken should be of the most digestible kind. A moderate proportion of the safest condiments may be used; for the appetite becomes more languid, and the springs of the machine less able to perform the operations that are required. In regard to drink, the use of fermented liquors, more especially wine, under due regulation, is allowable now, when the system requires an additional stimulus, to save it from torpidity.”*

But spirituous liquors, always injurious, are peculiarly so to the aged. “If they do appear at first to strengthen those who fly to them for relief, it is but to bring them to a state of weakness almost incurable. Their use should be forbidden at the board where we wish temperance and

* From Sir J. Sinclair's Code of Health, with a few alterations.

health to preside. Their flavour may be exquisite, but they owe it to essential oils or other principles which have a most pernicious influence over the human frame. Thus, then, with the exception of some cases of sudden debility, to dispel which a brisk stimulant is necessary; or some slow disorders, whose treatment requires that nature should be powerfully urged: in a word, excepting some habitual dispositions of a sluggish temperament, where life languishes when no longer kept up by artificial stimulants,—I say, with these exceptions, the use of spirituous liquors is useless, dangerous, and even fatal.”* They ought, as I have already said, to be regarded as medicines, and therefore their use should be regulated by physicians.

All mixtures of food, or variety of dishes at meals, are to be shunned by persons advanced in years, as well as those articles to which they have not been accustomed, or which experience has taught them do not agree with them.

Pork, and perhaps beef, is to be avoided; but mutton, poultry, game, and fish, are well calculated for the aged; and the variety they afford is amply sufficient.

Butter and cheese are difficult of digestion. If eaten to excess, or if not of the best kinds, they increase the costiveness to which old persons are subject.

Fruits, when thoroughly ripe, are innocent; well-cooked vegetables also should form a large part of the food of the aged.

During meals, weak malt liquor is better suited for them than wine.

It is certainly more healthful for old people, as well as for every one, to eat three or four times a-day, than to make one full meal only. No aged person should eat

* Salgues' Rules for Preserving the Health of the Aged.

animal food oftener than once in the day. The stomach will digest a dinner, when breakfast and supper have been light ; but if the digestion of one meal be not completed before another is taken, there is little chance of either being properly disposed of.

I end these observations on diet, by remarking that habits which might be indulged in with comparative impunity when the system was in its highest vigour, are productive of immediate evils to the weak frames of the aged ; and that therefore whatever I have reprobated, in the previous pages of this book, as hurtful to the young or the mature, is especially to be avoided by the aged. Others may, with some appearance of reason, hope to escape the penalties of their imprudence ; but for those who are on the brink of the grave, and whom the slightest departure from the dictates of reason may precipitate into it, to cherish any such delusive expectations, is inexcusable, and their vain dreams must speedily be dissipated by the stern realities of retributive suffering.

Having already pointed out the physiological reasons for cleanliness, and for a constant provision of pure air, — reasons which prove that attention to these things is indispensable at every period of life ;—I have here only to shew that their importance is not less to the aged, but rather greater than to those in the earlier stages of existence.

The whole system of the aged being one of decay, it may easily be believed that the refuse matter ejected from it is more impure, and therefore more likely to be hurtful, if suffered to remain in contact with the body, than in the time of youth ; and hence frequent ablution is desirable. It will not only prevent diseases of the skin, but impart freshness and elasticity to the whole economy.

Baths of any kind are so powerful in their operation, that they ought not to be taken by the aged without the

concurrence of their medical advisers. Where, however, they are permitted, tepid baths are productive of the most grateful effects ; “ they restore softness and elasticity to all the parts, and assist the play of the joints. Taken once a week, at least, they are peculiarly suited to old persons of a dry irritable constitution, or sedentary habits : phlegmatic old men, those who expectorate much, or are troubled with painful cramps, will also derive much benefit from the use of them.

“ On quitting the bath, certain precautions should be used, a neglect of which might cause very different results from those sought. Every attention should be used to preserve the skin from the effects of the atmosphere, to which it is at this moment very sensible and susceptible. To gain this end, the body should be dried as quickly as possible, and speedily and warmly clad. Dry rubbing over the whole body, before the fire, will assist the good effects of the bath. Strict attention to these points is especially to be observed in cold damp weather.” *

The lungs are excreting organs, and perform the same kind of office as the skin ; hence, for the reasons above given, there is a great difference between the pure breath of the young and that of those advanced in years ; and therefore there is a greater necessity for a constant supply of fresh air being admitted into the rooms of the aged ; who ought, for this reason among others, to be much in the open air ; for even if unable to engage in active exercise, they may at least often enjoy with safety this advantage which accompanies it.

In relation to clothing and atmospherical temperature at this period of life, I have but little to say that has not been already said on those subjects in the chapter on infancy. The natural heat of the aged is small, and

* Salgues on the Health of the Aged.

easily diminished. Their dress, therefore, should combine warmth with lightness. Woollen stuffs are best adapted for them ; they preserve the animal heat, which is ever escaping ; they concentrate it about the body, whilst they excite its development in a greater or less degree. They have the great advantage of exciting perspiration, of maintaining its regularity, and of preserving to the frame sufficient animal electricity, sometimes too ready to escape.

From the diminished force of the circulation, a common complaint of the aged is coldness of the extremities ; and nothing will tend more to remove this evil than stout woollen hose, which should be worn all the year round, and warm and thick, yet soft and easy shoes. Tight shoes and boots, by preventing the free circulation of the blood, are the causes of many evils in every period of life ; and especially they produce corns, bunions, &c. which not only inflict pain, but prevent the taking of exercise.

The bed-clothes of old persons should be of considerable warmth ; from neglect of this they are sometimes in very cold weather found dead in their beds.

All the parts of the dress should fit loosely ; let not attention to fashion induce those who may safely disregard it, to compromise their health or life by bandaging the body with close-fitting garments : especially should the upper parts be free from pressure. A high and tight stock has often caused apoplexy ; and costiveness is frequently produced by tight belts and waistbands. Persons subject to headaches should take off their stocks, and all other close-fitting articles of dress, as soon as they return home.

All vicissitudes of temperature are carefully to be avoided ; and in changing the winter-dress the utmost caution is requisite. The alteration must not be made until there is no longer any probability of a sudden variation of temperature ; and the warmer clothing should be resumed as soon as the summer has departed.

Cold winds, damp vapours, fogs, &c. are exceedingly hurtful to the aged ; and hence it is improper for them to go abroad early in the morning, or at night, except in the midst of summer, when the cheerfulness and freshness of nature may render an early walk highly beneficial.

Exercise being, as I have fully shewn, of first-rate importance to the preservation of the health of every preceding period of life, it is not to be supposed, notwithstanding the great changes that have taken place in their condition, that it is useless to the aged. Exercise, proportioned to the powers of the body, is as essential to the health of the old, as to that of the robust and active tempered.

There is little fear that the voluntary exertion of the aged will exceed the requisite quantity ; on the contrary, they are too prone to discontinue all exercise, and remain shut up in warm rooms, as if they imagined the least movement would be fatal. Such habits cannot fail to produce many diseases, as must be evident to every one who has perused this book. Sir John Sinclair truly observes, that “ whoever examines the accounts handed down to us of the longest livers will generally find that to the very last they used some exercise, as walking a certain distance every day, &c. This is commonly mentioned as something surprising in them, considering their great age ; whereas the truth is, that their living to such an age without some such exercise would have been the wonder.” *

Walking is the kind of exercise best fitted for old persons. It is gentle—it calls into play all the muscles, and

* Cicero constantly spent a portion of every day in walking ; and Milton, when no longer able to take exercise by himself on account of his blindness, had a machine constructed in his room, in which he used to be swung.

may easily be regulated according to the wants of the system.

When the state of the weather will not permit outdoor exercises, there are many in-door exercises that may be beneficially taken. Sir Walter Farquhar informed me that when precluded by age from going abroad, he used to walk five miles a-day in his own house.

Persons advanced in years are prone to taciturnity; and it is to this circumstance that the diseases of the lungs, which so often carry them off, are in a great measure to be ascribed. The lungs need exercise as well as the muscles; and by reading aloud, by singing, and conversation, they may be preserved in a state of health. The advanced age of schoolmasters, and other public speakers, may perhaps be attributed to the exercise given to their lungs. Hence the importance to the aged of preserving an erect posture to give their lungs full play.

But great exertion is far from being advantageous to the aged. It causes a rapid loss of heat, exhausts the vital powers, and often gives rise to aneurismal affections. Those who, in their old age, are compelled to labour for their subsistence are soon cut off. This is the season of *rest*; and in a well-constituted state of society there would be no necessity for action of any kind in it, but such as the health required.

During this period of life much sleep is needed; the nervous powers, easily exhausted, must be renewed; and nine or even ten hours of sleep may be allowed, except to the corpulent, for whom a less period must suffice.

The hours of retiring to rest should be early and regular. If there is any difficulty in procuring sleep, friction will, in most cases, remove it. Too many persons, under these circumstances, seek relief from opiates, and thereby hasten on their *eternal sleep*.

The choice of a dwelling is a matter of great import-

ance to every one, but is especially so to the aged. An elevated, yet sheltered situation, removed from large bodies of water, and from marshes and other wet grounds, is to be preferred.

Writers are divided upon the relative advantages of a town and of a country residence, some ascribing to one all necessary good qualities, and others asserting the direct contrary. There are, doubtless, inconveniences attending either; but I incline to think that for the aged the suburbs of a town are preferable to the exposed country. All round London there are situations where the advantages of a town and country residence may be enjoyed together; and London is, doubtless, the healthiest city in the world. Its salubrity would be increased if the practice of interring the dead within its boundaries were abandoned; and I rejoice to see the facilities that already exist, and that are now preparing, for the accomplishment of this desirable object. I need hardly say that I allude to the cemeteries. When I call London the healthiest city in the world, I of course do not mean every part of London; there is a wide difference between Brick-lane in the City, or Maze-pond in the Borough, and the elevated situations near Grosvenor-square, Oxford-street, and the Regent's-park. An old military friend of mine prefers London to any other place of residence, and gives the following reasons for his preference:—In winter London is warm, in spring it is gay, in summer it is shady, and in autumn it is quiet.

The last subject to be noticed is agitation of mind.

The mental faculties partake of the decay of the corporeal powers; and the exercise of the intellect must in old age be of the most gentle and unexciting kind. It is no longer equal to the performance of hard labour; and if it is compelled to toil, as in its time of perfection, it soon breaks down beneath the imposition, and refuses to serve a master so inconsiderate.

The aged should abstain from engaging in any enterprise, whether commercial, political, or literary, which may require much mental labour or occasion anxiety. They should eschew all causes of excitement with a determination not to be shaken, founded on the knowledge that they tend directly to shorten life, often bringing on insanity.*

Happily for man, the passions of the aged have lost much of their strength, and seldom disturb the serenity of the soul. Where this is not the case, the most vigorous exertions should be made to weaken their violence, and reduce them into subjection to the reason.†

* These observations apply to persons in the more vigorous periods of life, as well as to the aged, as the following passage from Sinclair's Code of Health well shews:—"The engrossing and harassing nature of their pursuits, and, in Great Britain, perhaps the unseasonable hours at which legislative business is carried on in Parliament, seem to wear out life. A retrospect of the last thirty years presents us with a list of not fewer than seven distinguished statesmen who have sunk, almost in the prime of life, under the turmoil and anxieties of their public duties, viz. Pitt, Fox, Whitbread, Romilly, Liverpool, Castlereagh, and Canning."

† Indulgence in any passion is often fatal to the aged; for by determining too large a quantity of blood to the brain, it not unfrequently occasions apoplexy. Anger is perhaps the passion most common to the aged, and its destructive effects are strikingly exemplified in the following case. An old naval officer went on one occasion to visit his son; and when, being about to return home, he took up his hat, he found it filled with stones, the work of his mischievous grandson. This circumstance threw him into a great passion, which was increased by the laughter in which his son and daughter indulged at the *mauvaise plaisanterie* of their hopeful heir: he fell down in an apoplectic fit; and though prompt medical aid was procured, he, the victim of passion, died a few days afterwards.

What can be more pitiable than to behold a human being, whose life is scarce worth a year's purchase, still immersed in the pursuits of business, still striving to amass wealth, and neglecting the enjoyments which a long life of labour has placed at his command, that he may add a little more to the hoard from which he must so soon be torn !

Or worse even than this sad spectacle is that of the hoary voluptuary, who, in spite of the warnings which his blunted senses are constantly laying before him of approaching dissolution, even at the eleventh hour pursues his sensual gratifications with an eagerness which seems to say, "I must soon leave the world of sense ; but before I depart, I will sate myself with its enjoyments."

Such men are beyond hope—they have no hopes, no conceptions above the low and debasing round to which their ideas have ever been confined ; and it is not to be regretted that they must soon rid the world of their presence by their follies or crimes.

The moderate exercise of the intellectual and moral faculties conduces much to the happiness and health of the aged. The pleasures of music, poetry, and painting, may yet confer on them many delightful hours ; and in the bosom of their families, in the midst of their friends, they may yet find objects for the kindly feelings of their nature ; and though death is near, they may still indulge in a harmless gaiety of spirit, and keep alive the glimmering lamp of life.

The aged are unfortunately too often inclined to melancholy, ennui, timidity, distrust, and fear of death. Such depressing emotions act most injuriously upon those who are subject to them ; and those who surround the old, and are charged with the care of ministering to their comforts, can do no greater service to them than keeping their sensibility constantly in play, and placing it in the most

pleasing and consoling situations. It is also the duty of those thus afflicted to cast off such sentiments. But those only can expect a happy old age whose youth and manhood have been passed in obedience to the dictates of a pure and elevated morality.

I have in the foregoing pages described old age as it is generally presented to us ; not as I think it might and ought to be.

There is in reality nothing in this period of life to occasion gloom and despondency, provided the preceding periods have been passed in accordance to the laws of God and of nature. Those persons whose conduct has been beneficent, whose motives have been pure, and whose habits have been temperate, may safely look forward to an old age of happiness : respected by their juniors, free from the strifes and cares of the world, and happy in the recollection of a well-spent life, they enjoy a calm peacefulness which more than compensates for the loss of some of the pleasures of youth. And how gratifying a sight is it to see the whiteheaded venerable patriarch displaying the kindness and cheerfulness of the young, and diffusing around him joy and happiness ! It has been my privilege to be personally acquainted with some such old men. The late Sir Isaac Heard, Garter King-at-Arms,—the Earl of Harcourt,—and Viscount Carlton,—all advanced in years, were yet of lively, cheerful dispositions, as I had many opportunities of observing during my professional attendance upon them. And two old ladies of my acquaintance, one of them aged 79, and the other 87, have better spirits than many young ladies in their teens.*

* That death loses many of its terrors on a near approach, we have the following strong evidence of that distinguished scholar and physician, Sir H. Halford, who has attended the death-beds of many distinguished personages. He says : “ Of the great

Some account of those persons who have been remarkable for longevity will appropriately conclude this book, and may perhaps be interesting to those who desire to attain old age.

The following statement is abridged from Sir John Sinclair's Code of Health and Longevity.

Isabel Walker, aged 112 years.

She was a native of Aberdeenshire. Nothing particular is known regarding her mode of living, or the circumstances which contributed to lengthen her life, excepting that she is said *to have possessed a placid temper*, and to have been in that medium state in regard to leanness and corpulency which is favourable to longevity. She died 2d November, 1774.

Peter Garden, aged 131 years.

He was likewise a native of Aberdeenshire. He lived in that county, and died on the 12th January, 1775. But little is known of his history. He was employed in agricultural labours nearly until his death; and preserved his

number to whom it has been my painful professional duty to have administered in the last hours of their lives, I have sometimes felt surprised that so few have appeared reluctant to go to 'the undiscovered country, from whose bourne no traveller returns.' Many, we may easily suppose, have manifested their willingness to die from an impatience of suffering, or from that passive indifference which is sometimes the result of debility and extreme bodily exhaustion. But I have seen those who have arrived at a fearless contemplation of the future from faith in the doctrine which our religion teaches. Such men were not only calm and supported, but even cheerful, in the hour of death; and I never quitted such a sick chamber without a wish that 'my last end might be like theirs.'" — SIR H. HALFORD'S *Oration before the Royal College of Physicians.*

looks so well, that he appeared, it is said, to be a fresher and younger man than his son, when both were advanced in years.

The Countess of Desmond, aged 140 years and upwards.

She was daughter of the Fitzgeralds of Drumona in Waterford ; and in the reign of Edward IV. married James, fourteenth Earl of Desmond. She lived to the age of some years above 140, and died in the reign of James I. It appears that the Countess retained her full vigour in a very advanced period of life ; for the ruin of the house of Desmond reduced her to poverty, and obliged her to take a journey from Bristol to London to solicit relief from the court at a time when she was above 140. The Countess is mentioned by Sir Walter Raleigh in his History of the World, and by Bacon in his work on Life and Death.

Thomas Parr, aged 152 years,

Was born in Shropshire, in 1483, in the reign of Edward IV., and died in the Strand, London, in 1635. He lived in the reigns of ten kings and queens, and was buried in Westminster Abbey. He seems to have been a man of a somewhat different constitution from the rest of the human species ; for a person who had seen him describes him thus :

“ From head to heel his body had all over
A quickset, thickset, nat’ral hairy cover.”

A short time before his death he was brought up to London by the Earl of Arundel, and carried to court. The king (Charles I.) said to him, “ You have lived longer than other men : what have you done more than other men ? ” He replied, “ I did penance when I was a hundred years old.”

His rules for longevity are these : “ Keep your head cool by temperance, your feet warm by exercise ; rise early,

and go soon to bed ; and if you are inclined to be fat, keep your eyes open, and your mouth shut ;” or in other words, “ Be both moderate in your sleep and diet.” If Parr practised the recommendations here expressed, it is not altogether surprising that he attained so great an age ; inasmuch as they are in strict accordance with physiological principles ; and it will be seen that they embrace some of the most important truths enunciated in this book.

When his body was dissected, all his inward parts appeared so healthy, that, if he had not changed his diet and air, he might probably have lived a good while longer. An account of the person and dissection of Parr was written by the celebrated Harvey.

Henry Jenkins, aged 169 years.

The birth-place of Jenkins is unknown, but there is satisfactory evidence of his great age. At the age of between ten and twelve he was sent to North Allerton with a horse-load of arrows, previous to the battle of Flodden, which was fought on the 9th of September, 1513. He died on the 8th day of December, 1670. He had been oft sworn in Chancery, and in other courts to above 140 years’ memory ; and there is a record preserved in the King’s Remembrancer’s Office in the Exchequer, by which it appears that Henry Jenkins of Ellerton-upon-Swale, labourer, aged 157, was produced and deposed as a witness. This deposition was taken in April 1665, at Kettering.

Little is known of his mode of living, excepting that towards the last century of his life he was a fisherman, and not only used to wade the streams, but actually swam rivers after he was full 100 years of age. When he could no longer follow the occupation of a fisherman, he went begging about Bolton, and other places in Yorkshire. His diet is said to have been coarse and sour.

Sarah Rovin, aged 164, and John Rovin, aged 172.

The only account we have of this venerable pair is an inscription upon a picture of them, dated August 25th, 1725, which states that they had been married 147 years, and were both born and died at Hadooaa in Temeswaer Banels (Hungary); that their children, two sons and two daughters, were all then alive: the younger son was 116 years of age, and had two great grandsons, one in the thirty-fifth, and the other in the twenty-seventh year of his age.

Petratsch Tortan, or Czartan, aged 185.

In a Dutch dictionary, intituled, “Het algemeen Historich Woonderbok, &c.,” there is an account given of this ancient personage, of which the following is a translation.

“Czartan was born in 1537 at Kofrock, a village four miles from Temeswaer, in Hungary, where he had lived 180 years. When the Turks took Temeswaer he kept his father’s cattle. A few days before his death, he walked, with the assistance of a stick, to the post-house of Kofrock, to ask charity of the travellers. He had but little sight, and few of his teeth remained. His son, 97 years of age, was born of his third wife. Being a Greek by religion, the old man was a strict observer of fasts, and never used any food but milk and cakes, together with a good glass of brandy. He had descendants in the fifth generation, with whom he sometimes sported, carrying them in his arms. He died in 1724. Count Wallis had a portrait taken of him, having fallen in with him some time before his death. The Dutch envoy, then at Vienna, transmitted this account to the States General.”*

* I have in this chapter, as my readers will perceive, quoted frequently from the Code of Health of the late Sir J. Sinclair; a

It is remarkable, that of these eight persons one only belonged to the higher ranks of society, all the rest being dependent for their subsistence on their own labour. Judging from this fact, it would appear that a condition of toil and of comparative poverty is more favourable to longevity than one in which there is no demand for exertion, and in which temptations to disobedience of the natural laws abound. But it is by no means necessary that the possession of wealth should be destructive of life. On the contrary, it certainly would, if properly employed, conduce much to the prolongation of life; and the fact that it does not generally do so, only proves how much ignorance and heedlessness there must be on the subject of health among the rich.

The following is a list of some of the most celebrated individuals who have attained what, according to the average duration of life, may be termed old age :—

Linnaeus	71	De Sacy	73
Gronovius	71	Crabbe	73
Grævius	71	Confucius	73
Racine	71	Lopez de Vega	73
Seneca	71	Johnson	74
Bourdaloue	72	La Fontaine	74
Robertson	72	Jenner	74
Malherbe	72	Vauban	74
Locke	73	Frederic II.	75
Dugald Stewart	73	Reaumur	75

gentleman with whom I had the pleasure of being personally acquainted, and who, a short time before his death, presented me with a copy of his work, accompanied with a letter, in which he speaks in flattering terms of my Treatise on the Eye. His Code of Health is almost the only work of importance in our language which contains much information on the health of the aged; and he has collected in it many curious and interesting facts, some of which I have thought would not be unacceptable to my readers.

Haller	75	Goethe	83
Cardan	75	D'Aubenton	83
Scaliger	75	Chas. Butler	83
Usher	75	Bentham	84
Prideaux	76	Sir J. Soane	84
La Grange	77	Franklin	84
Euler	77	Herschel	84
Sir Everard Home	77	Sir J. Sinclair	84
Buchanan	77	Raynal	84
Corneille	78	Newton	85
Roger Bacon	78	Anacreon	85
Galileo	78	Mirabeau	86
Swift	78	Halley	86
La Place	78	Dr. Young	86
Cullen	78	C. Hutton	86
Galen	79	Cassini	87
Massillon	79	Rowland Hill	89
Samuel Parr	79	Sophocles	90
Euripides	79	Sir C. Wren	91
Kant	80	Hobbes	91
Harvey	80	Wm. Hutton	92
Rollin	80	Adam Fergusson	93
Thucydides	80	Sir Hans Sloane	93
Young	80	Simonides	98
Juvenal	80	Zeno	98
Buffon	81	Herodian	100
Plato	81	Fontenelle	100
Henry	82	Gorgias	107
Pestalozzi	82	Hippocrates	109
Polybius	82		

In conclusion: the fact that some men have attained an age beyond 150 years in length, is sufficient to prove that the human frame is not formed for only a short term of existence, and that much may reasonably be expected from attention to the laws which regulate the health. It is a vulgar error to suppose that men are less strong and

vigorous, and therefore shorter lived, now than in former times. All the evidence we possess upon the subject goes to establish the cheering fact, that the human race has not degenerated, but that, on the contrary, the average term of existence has kept on increasing; and that every discovery in science and art tends, in some way or other, to ameliorate the condition and add to the years of mankind. Dr. Southwood Smith says: "Not only has the value of life in England been regularly increasing until it has advanced beyond that of any country of which there is any record, but the remarkable fact is established, that the whole mass of its people now live considerably longer than its higher classes did in the seventeenth and eighteenth centuries." Nothing can more clearly shew the value of knowledge, and the direct influence which its diffusion and extension exert in adding to the sum-total of happiness.

A knowledge of the circumstances on which health depends has, in an especial manner, this influence. Without a certain degree of health, all other advantages are unable to confer happiness. The condition of the body is intimately connected with that of the mind; and it is a truth too much disregarded, that the most valuable intellectual attainments and moral qualities can produce their full and legitimate results, both upon the individual possessing them and upon others, only when the physical powers are fully developed, and, by proper training, rendered the fit instruments of the mind. It is forgotten, also, that the mental qualities themselves depend greatly upon those of the body; and that when the latter is affected, the former is generally involved in its misfortune: so that, in reality, physical education is an essential part of mental education. This important truth is now beginning to be recognised; and we may confidently look

forward to the time when "how to take care of his health will be one of the leading parts of the moral and intellectual education of man."*

* Mill on Education.

THE END.

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
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