

Inaugural dissertation on the causes and effects of disease : considered in reference to the moral constitution of man : submitted to the Medical Faculty of the University of Edinburgh ... / by Henry Clark Barlow.

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vol 5

INAUGURAL DISSERTATION

ON THE

CAUSES AND EFFECTS OF DISEASE,

CONSIDERED IN REFERENCE TO THE

MORAL CONSTITUTION OF MAN.

INTERNATIONAL DISSEMINATION

OF THE

CAUSE AND EFFECTS OF DISSEMINATION

OF THE CAUSE AND EFFECTS OF DISSEMINATION

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(A) Tracts, 1667.
INAUGURAL DISSERTATION

ON THE

CAUSES AND EFFECTS OF DISEASE,

CONSIDERED IN REFERENCE TO THE

MORAL CONSTITUTION OF MAN.

SUBMITTED TO

THE MEDICAL FACULTY

OF THE

University of Edinburgh,

IN CONFORMITY WITH THE RULES FOR GRADUATION,

BY AUTHORITY OF THE

VERY REV. PRINCIPAL BAIRD,

AND WITH THE SANCTION OF

THE SENATUS ACADEMICUS,

BY

HENRY CLARK BARLOW,

Of London,

CANDIDATE FOR THE

DEGREE OF DOCTOR IN MEDICINE.

"Thy creatures have been my books, but thy Scriptures much more."

LORD BACON.

EDINBURGH:

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MDCCCXXXVII.

74

THE EFFECTS OF DIETARY
AND CLIMATE

ON THE
CONSTITUTION OF MAN
THE MEDICAL RESULTS

OF THE
JOURNAL OF THE
MEDICAL SOCIETY OF
LONDON

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JOURNAL OF THE
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LONDON



PREFACE.

THE following Dissertation was written with the view of placing the CAUSES and EFFECTS of DISEASE in what the Author conceived to be their proper light—the relation which they hold to the moral constitution of man. By thus endeavouring to point out, however imperfectly, the true philosophy of disease some addition, it was hoped, might happily be made to that great argument, for “the power, wisdom, and goodness of God, as manifested in the creation,” which has of late been so ably advocated by the writers of the Bridgewater Treatises.

The very flattering manner in which, as an “Inaugural Dissertation,” it was

received and approved of by the Medical Faculty, induced the Author to print it in its present form; and he has merely farther to remark, that the extent of the subject, and the brevity required in treating it, made it necessary, even at the risk of obscurity, to suggest some things rather than to express them, and to state others in the most general terms: a detailed account of these will be found in medical and scientific works, a few only of which it has been thought requisite to quote.

EDINBURGH, AUGUST 14, 1837.

DEDICATION.

DEAR PARENTS,

To a Mother's early teaching the right direction of the mind is due; a Father's instructions belong more to youth; but by the example only of both are those lessons confirmed. If, therefore, the sentiments contained in the following pages be such as the good will approve, to you I am indebted for the approval;—and to you, in grateful acknowledgment of those precepts which are as the first elements of thought, but more especially of that example which is the better guide, and of that parental solicitude which, however it may profit, can never be repaid, this Dissertation is dedicated,

By your affectionate Son,

HENRY CLARK BARLOW.

THE HISTORY OF THE

REPUBLIC OF THE UNITED STATES

It is a history of the people of the United States, from the first settlement of the country to the present time. It is a history of the growth of the nation, of the development of its institutions, and of the progress of its civilization. It is a history of the struggles and triumphs of the people, of the sacrifices and heroisms of the past, and of the hopes and dreams of the future. It is a history of the United States, as it is, and as it has been, and as it is to be.

THE HISTORY OF THE

REPUBLIC OF THE UNITED STATES

TO
WILLIAM PULTENEY ALISON, M.D.
F. R. S. E.

PROFESSOR OF THE INSTITUTES OF MEDICINE
IN THE UNIVERSITY OF EDINBURGH,

IN WHOM
THE KIND FRIEND AND ACCOMPLISHED PHYSICIAN
ARE EQUALLY COMBINED,
AND WHO,
TO THE DILIGENT CULTIVATION OF MEDICAL SCIENCE,
ADDS THE PRACTICE
OF A CHRISTIAN PHILANTHROPY,
WHICH IT IS EASIER TO ADMIRE THAN TO IMITATE,

THESE PAGES
ARE MOST RESPECTFULLY INSCRIBED,
BY HIS OBLIGED FRIEND
AND FORMER PUPIL,

THE AUTHOR.

WILLIAM BENTLEY ALISON M.D.

M.D. 1852

PROFESSOR OF THE HISTORY OF MEDICINE
IN THE UNIVERSITY OF CAMBRIDGE

IN 1852

THE KING EDWARD AND ROYAL COLLEGE OF PHYSICIANS

AND THE ROYAL SOCIETY OF MEDICINE

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AND THE ROYAL SOCIETY OF MEDICINE

AND THE ROYAL SOCIETY OF MEDICINE

TO
ROBERT JAMESON, ESQ.
F. R. S. L. & E.

REGIUS PROFESSOR OF NATURAL HISTORY
IN THE UNIVERSITY OF EDINBURGH,
WHO, IN UNFOLDING THE WONDERS OF CREATION,
HAS EVER INCULCATED
THOSE HIGHER VIEWS WHICH LOOK TO THE CREATOR,
WHEREBY ALONE
THE LEGITIMATE OBJECT OF ALL SCIENCE
CAN BE ATTAINED,
AND THE MIND EDUCATED NOT FOR TIME ONLY,
BUT FOR ETERNITY,

THESE PAGES
ARE MOST RESPECTFULLY INSCRIBED,
BY HIS OBLIGED FRIEND AND FORMER PUPIL,
THE AUTHOR.

TO

ROBERT WALTON

AT A L.A.

SECRET PROCEEDING IN A L.A. COURT

IN THE PRESENCE OF THE JURY

AND IN THE PRESENCE OF THE COURT

ON THE 12TH DAY OF

THOSE HOURS WHEN THE COURT

WAS IN SESSION

THE COURT HAS ORDERED

TO BE ATTACHED

AND THE COURT HAS ORDERED

TO BE FOR THE

THE COURT

THE COURT HAS ORDERED

BY HIS ORDERED FRIEND AND

THE COURT

TO
SIR CHARLES BELL, K. H.
F. R. S. L. & E.

PROFESSOR OF SURGERY IN THE UNIVERSITY
OF EDINBURGH,

WHOSE BRILLIANT DISCOVERIES IN ANATOMICAL SCIENCE
REFLECT HONOUR ON OUR COUNTRY,

AND WHOSE DEMONSTRATIONS
HAVE AFFORDED TO THE CHRISTIAN ADVOCATE
THE STRONGEST ARGUMENTS

FOR THE
BENEVOLENT INTENTIONS OF THE DEITY,

THESE PAGES
ARE MOST RESPECTFULLY INSCRIBED,

BY HIS OBLIGED FRIEND,

THE AUTHOR.

TO THE

W. B. & L. & B.

OF THE UNIVERSITY OF EDINBURGH

THE UNIVERSITY OF EDINBURGH

AND FROM THE UNIVERSITY OF EDINBURGH

FOR THE

REMOVAL OF THE

THESE PAGES

AND MOST RESPECTFULLY REQUESTING

THEIR OBLIGED FRIEND

THE AUTHOR

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ON THE
CAUSES AND EFFECTS OF DISEASE,
CONSIDERED IN REFERENCE TO THE
MORAL CONSTITUTION OF MAN.

ERRATA.

Page 27, line 21, *for* excretion *read* excretion.

-- 67, -- 7, *insert* to *before* possess.

very opposite reflections. As detailed in the systems of Nosologists, with all their trains of symptoms, they present to us a lengthened and terrible array; and were we to consider them thus abstractedly, unconnected with other circumstances in our nature and history, to assign a final cause would be wholly impossible.

But what subject is there, in the wide circle of philosophical inquiry, which, when considered alone, without relation to other portions of the same intelligent system, would not occasion a similar difficulty? If it be true that he is the best interpreter of nature, who has attained the most comprehensive knowledge of her laws, that

he only can best account for effects who is most conversant with the causes producing them, we may be quite certain, that it is not by the study of one isolated link only, in the great chain of dependencies, that we can expect to comprehend its object, or to explain its meaning. If this be true of the phenomena of matter, it is equally true of the phenomena of mind, and is of double importance in considering the subject of disease, where phenomena of both kinds are intimately combined. Nor can we, I think, attempt to give any satisfactory account whatever of the existence of disease, without keeping steadily in view its moral tendency, and the important office it performs in enforcing the observance of those conditions, on which our well being and happiness depend. Were we to regard disease, merely as a state of suffering, without endeavouring to satisfy ourselves *why it is so*, we might, from its numerous sources and varieties, be induced to think that the constitution of man, and of the earth, his habitation, had been adapted to each other on the principle of penal arrangement, and that a precarious existence had been rendered still more uncertain, by an endless complication of diseases and pains. Such a view, however, would but ill accord with the idea we form of an All-wise and Gracious Creator; if our speculations were to leave us here, they would leave us in a dismal dilemma indeed, we should have a theory, but it would be the very opposite to truth.

Far different is the conclusion which the consideration of disease, when taken in connection with other particulars of our complex career, will enable us to arrive at; viewed in relation to other phenomena, equally forming a part of our nature and history, its existence and tendency will be found, not to render us miserable, but, like every other dispensation of the bountiful Author of our being, to administer to our advantage, and render us happy; and we trust that we shall be able, not only to prove this, but also to point out, by marks which cannot be mistaken, the benevolent course observed throughout; thus illustrating what an inspired Prophet of old declared of the Almighty, that "He doth not afflict willingly, nor grieve the children of men."

During the prevalence of a fabulous theology, diseases were popularly ascribed either to the anger of the gods, or to the malicious influence of *dæmons*, and such remedies were resorted to as fear might suggest, or craftiness design. When the causes of disease became better understood, those which were beyond the comprehension of ordinary minds, were still believed to proceed from the same imaginary sources, and invocations and sacrifices continued, in these instances, the most esteemed of Therapeutic agents. Hippocrates, however, strenuously opposed the opinion, that some particular sicknesses were divine, or sent immediately from the gods, affirming,

that no diseases came more from the gods than others, all coming from them, and yet all owning their proper natural causes. The Jews, who, under the dispensation of Moses, enjoyed a pure theology, and believed Jehovah to be the only *living* God, did not consider disease as proceeding wholly from secondary causes; there were occasions when, from the very obvious connexion of disease with moral delinquency, or from the express declaration of unerring truth, they recognised the immediate "hand of the Lord." For although the sanatory regulations established by Moses would equally apply to other nations liable to the same diseases, and show that they were regarded as the effects of natural causes, and as much as possible to be prevented, yet this inference does not limit the mode of their operation; they might occur as natural consequences, or they might be directed to specific purposes by supernatural power; in either case the object to be attained would be the same, the vindication of an authority which could not with impunity be disregarded. To draw conclusions from the history of the Jews, and then apply them to our own, may at first sight perhaps seem objectionable, considering the peculiar circumstances in which they were placed; but if we attend more particularly to what those circumstances were, and the reason of them, and recollect that the Jews are not the only nation represented in Scripture as thus suffering disease, we shall be convinced that one of

the most important objects of the sacred writers is to draw our attention to facts in the economy of God's government of the world, which we could not otherwise have known; to object to these, therefore, because human wisdom does not furnish the like, or because they do not come within the legitimate scope of scientific inquiry, is to defeat the very intention for which such important facts were revealed to us. Profane history, it may be remarked, merely relates facts; sacred history explains them. The former traces causes only so far as they are seen, the latter exhibits to the inward sense the Almighty power which guides and directs the whole.

The subject of this dissertation has another connexion with Scripture, which it is necessary here to mention, and that is, the primary cause of all disease, and of death itself — we should still be involved in endless difficulties and doubts on this momentous subject, were it not for the information which the Scriptures afford; what otherwise is dark they illumine, and the light thus obtained, while it shows us the true origin of death, and its ordinary precursor, disease, opens up to our view those cheering prospects of life and immortality, through which the sufferings of this present scene may be quietly borne, and the once appalling change from time to eternity divested of all its terrors.

The adaptation of disease to the moral constitution of man, considered merely in relation to

this world, admits of the most satisfactory illustration, but when viewed in relation also to that which is to come, it assumes an importance not otherwise apparent, and the phenomena of disease stand forth in their true character, *witnesses of the wisdom and goodness of God.*

CAUSES OF DISEASE.

“WE call,” says a distinguished pathologist, “all states of the living body diseased, in which there are such deviations from its *natural condition*, as cause suffering or inconvenience, or endanger life;” and we are now to inquire—Whence do these deviations, these pathological states proceed, or how are they occasioned? Among medical writers, the causes of disease are commonly considered as of three kinds—the *predisposing*, the *exciting*, and the *proximate* causes: by the former two are meant, all those external physical circumstances, together with those conditions both of the body and mind, which have anything to do in the production of disease; by the latter is intended that particular state induced by the former, and characterized by symptoms proper to itself. In other words, the predisposing and exciting causes are those which occasion the disease, and might, perhaps, with equal propriety be called *occasional* causes; the proximate cause is that which constitutes, or is itself, the disease. The word “occasional,” as a general term, appears in fact more applicable to the causes producing disease, than the particular expressions “predisposing” and “exciting;” for not only do these sometimes take the place of each other, as in the case of contagious diseases, where the contagion always existing or scarcely ever ceasing to exist, and thereby

predisposing to its own reception, is called into activity by a cause which, on other occasions, and in relation to other diseases, acts the part of a predisposing cause: but the very terms themselves are apt to mislead us as to the immediate effect produced; for the state of the body which is said to predispose it to disease, if the definition of disease which we have adopted be true, is often as much entitled to that name as any after state may be; there is at least "such a deviation from the natural condition" as to cause "inconvenience," if not real suffering; and though it may not, in one sense, "endanger life," it certainly makes life less secure; the "natural condition" is gone, whatever else may follow. Not unfrequently, as Dr. Copland observes, "the predisposing causes" are "the true and only exciting causes;" and many of those called "exciting," "merely predispose the system to the action of others following in close succession." Among the more common occasional causes of disease, may be mentioned intemperance in food and drink, immoderate desires and passions, and vice in all its forms; laborious occupations, too long persisted in, to the neglect of proper relaxation and rest; neglect of cleanliness, of exercise, and useful employment; exposure to sudden transitions of temperature, to great heat, to cold and wet; mental inactivity, anxiety, and particularly fear; together with privations and excesses of every kind; and, in short, whatever tends to disturb the just

performance of the bodily functions, and the right regulation of the mental faculties, by producing unnatural depression on the one hand, or undue excitement on the other. There are some diseases which require for their development the action of a *specific cause*, in conjunction with one or more of the common occasional causes above mentioned; hence these latter are sometimes called *determining* or *consecutive causes*; such diseases, under ordinary circumstances, being rarely produced without this co-operation. But even after subjection to a specific cause, its effect may often be prevented by what has been termed “fortifying the system against it,” and carefully avoiding whatever has a tendency to light up disease. But the best mode of fortifying the system against disease, is to do so on general principles, by attending to all those circumstances which are found necessary for the preservation of health — for the continuous enjoyment of that best of all temporal blessings, the “*mens sana in corpore sano*.” Numerous as the causes of disease undoubtedly are, the effect they produce is always more or less dependent upon ourselves, and might be avoided, did we take those precautions which the nature of the danger requires, and use those means of prevention which a gracious Providence has placed at our disposal. — Morbific agents appear to act primarily either on the nervous system, or on the blood, causing alterations in the innervation, and also in the

constitution of the blood, and thus giving rise to lesions of the three fundamental functions of living bodies, circulation, nutrition, and secretion ; but the degree, and, in some instances, the kind of disease which follows, is determined by the state of the system at the time of its subjection to the noxious agent : a mild, or a severe form of disease, will thence result, and the probability of the patient's recovery depend, not so much upon the specific cause, as upon the condition in which it found him. When any deviation from the natural healthy standard of the body has taken place, the balance of the system is disturbed, and its capability of resisting noxious influences enfeebled ; in this state of things, a disease may prove fatal, which otherwise would not have been excited, or had it taken effect at all, have easily been conducted to a favourable issue. The majority of diseases originate from causes more or less depending on individuals themselves ; some arise from causes under the controul of communities, and require the mutual co-operation of many to check them effectually : the very extent to which these are capable of spreading, would seem to be a provision for calling the attention of mankind generally to their removal, that all might benefit by the means employed. But even in these cases, the efforts of individuals to protect themselves are not wholly unavailing — in many instances they are quite adequate ; and if there always should be found some diseases, which neither

universal nor individual precautions can prevent, we may rest assured, it is because they have a part allotted them, which it is good for us they should perform.

OF ENDEMIC DISEASES.

IF we cannot prevent the existence of specific causes of disease, we may, in most instances, modify their influence; in very many cases, we can disarm them of their ability to hurt us, and if these means should fail, we have still a resource left, in retiring from their sphere of operation. Of these causes, no one perhaps is more universal than that which exists in situations where great heat and dryness succeed to considerable moisture, and is found to be more or less prevalent in marshy and other districts, where these changes are observed to take place: it is usually termed "Malaria," and is productive of fevers of an intermittent and remittent type. These diseases, called *endemic*, from being confined to particular localities and countries, when favoured by concurrent causes, have been productive of great mortality, and both physicians and historians have borne ample testimony to their occasional virulence. "The air of a marsh," says Dr. John Hunter, "may destroy an army almost as soon as the true plague;" in some instances, probably much sooner: thus the French army, which in 1528 attempted Naples, were reduced, within a few days, from 28,000 men to 4,000, by choosing an injudicious encampment at Baia.* The advantage of getting to the windward side of a marsh in such cases is obvious.

* Dr. MacCulloch on Malaria.

Sir John Pringle remarks, that from the foundation of Rome to the year U. C. 459, he finds no less than fifteen plagues mentioned by Livy, which appear to have been only so many malignant and destructive endemics, "occasioned by the putrid effluvia from the neighbouring marshes. But when drains and common sewers were made, Rome became much more healthful; and then only the low and wet places of Latium remained sickly. Afterwards, when the city fell into the hands of the Goths, the drains being stopped, and the aqueducts cut, the Roman territory became one continued marsh; which for a series of years occasioned an incredible desolation." *

The ancients appear to have been well acquainted with the means of removing the malaria arising from these sources. Hippocrates, in his *Epidemics*, states, that the city of Abydos had been several times depopulated by fever; but the adjoining marshes having been drained by his advice, it became healthy. The effect of trees, in intercepting the progress of the morbid agent, was also well known; and planting, as a palliative measure, was frequently resorted to. The most effectual remedy, however, is a careful cultivation of the ground, "ever opening the surface for the escape of pestilential gases, and exhausting the morbid principle by a constant succession of crops."† It has sometimes happened that drain-

* *Observations on Diseases of the Army.*

† Fergusson on Marsh Poison. *Edin. Phil. Trans.* vol. ix.

ing, and attempts at cultivation, have at first increased the effects they were intended to remove, probably from the incomplete manner in which they were performed, or from a surface more capable of generating malaria during the drying process, being exposed at an unfit season. That clearing the soil should, in some situations, be the occasion of diffusing malaria, previously confined *in situ* by the trees covering the ground, and generated in less quantity from the shelter thus afforded, we might naturally expect; and considerable caution, therefore, should be used, whenever this operation is undertaken, as also during the reclaiming of the land, when, by a well directed system of cultivation, the barren wilderness is being transformed into the fruitful field, and the earth yielding her increase, no longer under a curse, becomes the prolific parent of agricultural prosperity.

There are several circumstances connected with the existence of malaria, which show, that where it cannot be prevented, it may at least be avoided, or very much modified. The noxious effluvia are not generated so long as marshes and soils retain their moisture, or are covered with water. Dr. Fergusson has shown that the poison is produced in its most effective state at a highly advanced stage of the drying process, and that the only condition indispensable to its formation is "the paucity of water where it has previously and recently abounded;" a high temperature in-

creasing the amount of poison disengaged, and probably also augmenting its intensity. It does not appear that the decomposition of vegetable matter is absolutely necessary to the development of malaria, though putrefaction must sometimes precede or accompany it; for the worst effects have been experienced in situations where vegetation never existed or could exist, and in localities where vegetable matter in a state of decomposition exists to a considerable extent, as in peat-bogs, it is not produced. This has been ascribed to the subcarbonized quality of the vegetable matter in peat, but it may also, perhaps, be owing to the retention of moisture. It has been thought not improbable, that the injurious effect ascribed to malaria may arise in part from the development of negative electricity in the air; a cause which would appear to possess considerable influence in the production of other diseases, as Mr. Orton has, I think, satisfactorily shown.* Whether malaria be always the same, or admit of varieties, has not been ascertained. In some situations and seasons it is more active than in others, but this may depend upon different degrees of concentration, connected with physical changes more or less obvious; or it may arise from local circumstances, and be much modified by the condition of those who are subjected to its influence. Inactivity appears to favour its operation, and it more easily takes effect where no resistance is offered.

* See Orton on Cholera, p. 254.

At night, the virulence of malaria or marsh poison is much increased ; and both from this cause, as also that the body is then less capable of resisting it, its attacks are more certain and more fatal ; sleep being invariably productive of disease in its most aggravated form.

The distance to which marsh poison is believed to extend has been differently stated. M. Monfalcon is of opinion that in Europe it never rises higher than from 1400 to 1600 English feet, nor exceeds from 600 to 1000 feet in the horizontal direction, but that in equatorial regions it extends much more. In Sicily, according to Captain Smith's Statistical Tables, the higher grounds suffer from malaria as much as the lower. This may be explained by the temperature and direction of the southerly winds which prevail in that country ; and probably, wherever a similar effect occurs, it may be accounted for by analogous causes, for it is well known that comparative immunity is obtained at the elevation of a few feet above the surface of the soil. It is a common remark in many parts of Italy, observes Dr. MacCulloch, that so long as the labourers in the field remain in the erect posture, they incur little danger, but if they sit or lie down on the ground, they are attacked with fever. In Lincolnshire, also, there is a prevalent notion that marsh poison does not rise higher than six feet from the surface, and that persons who sleep above the ground floor are perfectly

safe ; indeed, in all malarious countries, as Dr. Fergusson remarks, the inhabitants of ground floors are uniformly affected in a greater proportion than those of upper storeys. Another evidence of the ordinary low level of the poison, is afforded by the remarkable fact, as the same writer states, that it is certainly lost and absorbed by passing over a small surface of water.

Dr. Blane, in his " Diseases of Seamen," informs us, that " when the ships anchored close to the shore at Rockfort (Jamaica) so as to smell the land air, the health of the seamen was affected, but upon removing two cables' length, no inconvenience was perceived." So also Baglivi represents the malaria of Rome as existing only in particular parts of the city, and asserts as matter of wonder, that the healthy are separated from the unhealthy spots only by very short spaces, the former being chiefly on the northern and eastern quarters of the city farthest from the river. Many other authorities might be quoted to show that the noxious effluvia are nearly confined to their original source.

To prevent the influence of malaria, one of the most simple means is by a free circulation of air. Dr. Clark believes, that by attending to this, and having his room kept well heated by a fire during the night, a traveller might sleep with perfect safety in the centre of the Pontine marshes. However little disposed one might be to try this experiment, so opposite to the advice

of Lancisi, who admonishes all those who have occasion to travel through these marshes in summer, *not to do it at night*, the remark shows the importance attached to ventilation, by a writer who has made the influence of climate, in relation to disease, a particular subject of study. The use of woollen clothing also, especially of flannel next the skin, is a valuable auxiliary against the attacks of malaria; it is to this, in a great measure, that sailors owe their health in all changes of climate; and Brochi is of opinion that the chief protection of the ancient Romans against malaria, consisted in their woollen garments, which kept their bodies in a constant state of transpiration. Since the use of similar clothing has again come into fashion at Rome, intermittent fevers are reported to have diminished. Cleanliness is another very important condition to be attended to; the Dutch, notwithstanding the badness of their climate, are a healthy people; and this is mainly attributable to the strict habits of cleanliness so universally prevalent among them. Their warm clothing no doubt assists, and something also is due to their having become acclimated to the country—a mode of adaptation found to prevail extensively among the natives of tropical regions, and met with in the inhabitants of unhealthy districts generally, whereby they are rendered less susceptible of influences, which to others might prove speedily fatal. If to the above preventative means we add, a due

attention to diet and mode of life, proper exercise, together with that most universally useful of all prophylactics, a well regulated and cheerful mind, the list will be nearly complete.

With regard to the latter, it has been well said, that "a calm, confident, and well-employed mind, moderately occupied, and interested with its pursuit, unruffled by gusts of temper or passion, not weakened by inordinate indulgence of the desires, with a sufficient gratification of the wants and wishes to give a *foretaste of more perfect enjoyment, and to leave still more to aspire after*, so that the capacity of gratification be not exhausted, is that state which most successfully opposes the impression of endemic influence, which, assisted by the sensual indulgences of some, the ill-regulated passions and dispositions of others, and the carelessness of many, prove so destructive to human life."* The motive which an endemic influence thus furnishes for the cultivation of sound principles of happiness, is not the only benefit it confers. It also acts as a useful stimulus to the exercise of our physical powers, and calls into activity those faculties of contrivance and design by which we adapt nature to our use, and convert the very obstacles at first presented into means of promoting our further advantage. Endemics, arising from terrestrial emanations, seem to compel us, as it were, in our own defence, to obey that command once deli-

* Dr. Copland, in Dict. of Pract. Med., Art. *Disease*.

vered to our race, “replenish the earth and *subdue* it ;” and yet, at the same time, are so tempered to our weakness, that the conditions necessary for the accomplishment of this object may be performed without any unavoidable ill consequences, provided they are undertaken and carried on in conformity to those laws on which the development of the phenomena of endemics depends. Nor can we consider their existence as calculated to restrict the intercourse of mankind, where such is desirable, and conducted on friendly and equitable principles ; but when not, they may become the surest safeguards of an otherwise defenceless country, and, what to the simple-minded native is a source of life and health, to the unwelcome aggressor may bring disease and death. At the same time, we must remark, that there may be portions of the earth’s surface at present unfit for the reception and support of human beings ; but by the “forming effects” continually going on, daily becoming less so ; or there may be situations where, from political or other motives, it may seem desirable that Europeans should establish themselves, yet the climate to them proves so unfavourable, that their health cannot by any means be preserved. In both cases, nature seems to have prohibited our approach ; and if men will act in opposition to her counsel, they cannot claim exemption from the consequences it may occasion.

OF CONTAGIOUS DISEASES.

FEVERS, which have commenced as “intermittents,” frequently pass into “remittents,” and these into a continued form. In this way diseases have arisen, characterised by such dangerous and “putrid symptoms,” as not only to have been called pestilential, but to have been confounded with the plague itself. For several years before the appearance of the great plague in London, intermittent and remittent fevers, accompanied with a severe form of dysentery, prevailed to a fearful extent. Burnet, in his History of the Reformation, tells us, that in the last year of Queen Mary’s reign (1557), intermittents were so universal and contagious, that they raged like a plague. All large towns appear to have suffered in a similar manner, and from similar causes—chiefly the loathsome and filthy state in which they were kept, and the uncleanly habits of the people. When fevers become continued, they not unfrequently become contagious also, and are more or less communicable from one individual to another; the effluvia which escape from the bodies of those labouring under disease, either from the surface generally, or by transpiration through the membrane lining the air-cells of the lungs, or perhaps in both ways, occasioning in persons subjected to their influence, either by inhalation or by cuticular absorption, or, as some

have supposed, by swallowing the poison with the saliva, the same specific disease ; so that a fever arising in one way, may come to be propagated in another. This transformation and propagation depends very much upon the previous state of the patient and recipient, combined with one or more of those determining causes previously mentioned ; and some physicians are of opinion that the causes which lead to this change of form, are quite adequate of themselves to the original production of continued fever ; and that typhus, or the severe continued fever, does very frequently arise in this manner in the hovels of the poor, and from thence, when fully concentrated, extend its inroads around. “ If a disease,” observes Dr. John Hunter, “ arise from contagion, there are sure remedies against it, which are so well ascertained, that while the plague, the most contagious and fatal of all diseases, commits its greatest ravages in large cities, individuals remain in the midst of them in perfect security, trusting to a careful seclusion under proper regulations.” When the plague is at Constantinople, the Frank residents live in perfect security within the suburb of Pera ; and it is well known that the disease does not even cross the confined streets of the city, though not more than ten feet wide. During a residence at Aleppo, at the time of the plague, Dr. Russell found himself quite safe at a distance of four or five feet from the sick. The contagion of small

pox “ was believed by Dr. Haygarth, not only from his own experience, but also from a series of experiments conducted by Dr. O’Ryan of Lyons, not to extend beyond half a yard from the patient ; and the contagion of typhus to be at least as limited.”* That the morbid effluvia, therefore, are confined to a very small space around the sufferer, we may fairly conclude ; and if we ask, Why is this ? — why does not the matter of contagion extend its influence to double or treble this distance ? — the obvious reply is, Because the laws of Nature have been framed with a benevolent purpose, and herein is this purpose apparent, in that, as Dr. Henry remarks, “ it admits of all those soothing and beneficial ministrations, which do not require a very near approach to the sick, with little or no danger to the friends and attendants.” We might also notice the law of the diffusibility of gases in relation to contagious effluvia, in virtue of which they are diluted below the possibility of producing disease. There is no reason to believe that the atmosphere can be mingled with such a proportion of animal contagion, as to become infectious to numbers : the extreme mobility of the particles of air among each other, and the almost unceasing variations of temperature at the earth’s surface, occasion constant, though sometimes scarcely perceptible, currents, which mingle any poisonous vapours

* Dr. Henry, in Report of British Association, 1834.

that may be abroad with the general atmospheric mass. All experience, as well as general reasoning, is against the wide diffusion of animal contagion in an active state.* Currents of air, more or less influenced by electric changes, appear also as among the means which Providence has appointed for the dissipation of other specific causes of disease already mentioned. The effect of a high temperature, and of certain chemical substances in decomposing contagious effluvia, and thereby destroying their energy, may also be justly ascribed to the same benevolent intention. Neither does the circumstance that these effluvia attach themselves with great tenacity to porous materials, thence called "fomites," at all make against the argument; for the laws of these are known to a sufficient extent to enable us to provide against them. Season has much influence over some contagions; the season of the Plague is the summer and autumn, and when it has appeared at any other it has rarely spread; the inertness of the Plague at the approach of winter was shown in the last Plague of London, and in the Plague at Moscow in 1771 — yet exceptions to this do sometimes occur; thus, in 1813 the disease raged in summer at Malta, but, two years after, in the winter at Corfu. In Egypt the plague has been considered as endemic, and Grand Cairo pointed out as its principal seat;

* Dr. Henry, *ut supra*.

whether correctly or not it is difficult to say, the reproach of harbouring such a guest being indignantly repelled by all.

Sir John Pringle thought that Mahometanism had much to do in this disease, and remarks that Egypt was much more healthful before it became a province of the Ottoman empire. In Sennaar, where this religion is likewise established — “pestilential fevers make great ravages, but seldom visit the Abyssinians who border on that kingdom, and live in a hotter climate, but are Christians.”* The fatalism of the Turks is no doubt very favourable to the propagation of contagious diseases; but how far Christianity is the sole palladium of the Abyssinians, though we cannot question its influence to a certain extent, appears somewhat doubtful, and we would suggest the “hotter climate” as acting no mean part in this affair. It is by the effect of heat, observes Dr. Bancroft, that the plague seldom appears in Upper Egypt, and never farther south than the cataracts, as he was assured by Mr. Brown, the African traveller, and that it ceases earlier at Cairo than at Rosetta. At Grand Cairo, putrid and pestilential fevers, including the plague, prevail during the months of March, April, and May, which are the most unpleasant in the whole year, the weather being very close and sultry, and the winds from the south; but

* Diseases of the Army.

these diseases cease at the overflowing of the Nile, which begins to rise about the middle of June ; the north and north-west winds then set in, and the air becomes much cooler—Europeans, it is said, not unfrequently being obliged to wear furs. These changes are very important in setting bounds to the Plague : “ Les vents du nord, les extremes du froid et du chaud,” as Desgenettes states, “ la font cesser presque entirement ;” and thus the natural limitations effected by physical agents in fulfilling their appointed courses, seem to declare, more forcibly than words can express, the fiat of their intelligent Creator, as saying to the pestilence, “ Hitherto shalt thou come, but no further.” There is a popular belief all over the Levant, that the heavy dews which commence about St. John’s Day, (24th of June), check the progress of the plague ; and it is a well ascertained fact, that although the disease had been previously raging, the inhabitants may after that day leave their homes and mix in society with comparative security. The uniform course of this disease from south to north, from Cairo to Alexandria, and thence by way of Smyrna to Constantinople, may also be noticed. In consequence of this, when the Plague is at Damascus, the inhabitants of Aleppo hold themselves in readiness to *shut up*, or leave the town ; but when at Smyrna, the danger has passed, and they have no more fears of contagion. It is a happy circumstance for mankind, that by shut-

ting themselves up, they may shut out this formidable malady. But absolute seclusion does not appear to be required. Dr. Russel, during his residence at Aleppo, although he confined himself to the house, used to prescribe for the numerous patients who came to consult him, from a window raised a few feet above the ground, and yet escaped the disease. Bonaparte also, during his Egyptian expedition, in order to inspire confidence, did not hesitate to shake hands with the sick, though he carefully avoided inhaling their breaths. Indeed, so long as the breaths of the patients are avoided, and as much as possible all personal contact, the medical attendants seem to run little risk, and may inhale, for a limited time, the atmosphere of a pest house without taking the disease.

Contagion is generated in the living system only, and seems to consist of elements feebly united, and separated from the blood by the ordinary channels of excretion in certain morbid states of that fluid. It has not been determined whether the effluvia are capable of combining chemically with the atmosphere, or exist mechanically mixed with it, but the latter is most probable; and free dilution with air, by well planned and assiduous ventilation, is the most certain means of security against contagious emanations in general. The possibility of disease being thus communicated from one to another, and spreading and multiplying its victims with fearful and fatal rapidity,

affords the strongest motive we can conceive of, for inducing mankind to adopt the most effective measures against it; and where these have been adopted, the happiest results have followed, and exemption from disease obtained along with many other advantages. Contagious diseases are undoubtedly more under human controul than some others, and yet none have perhaps been so destructive to mankind as these, from the utter disregard shown to the causes which combine to occasion them, and to the means whereby they are propagated. Of these causes and means, one of the most conspicuous is *War*: its relation to disease is worthy of our consideration.

CONNEXION OF DISEASE WITH WAR.

THOUGH it may be difficult to determine *in what manner* a contagious poison is generated in the living system, yet it is very easy to point out *under what circumstances* this takes place, and to specify the conditions favourable to its production; for these are matters of experience so notorious, that both ancient and modern history afford abundant instances of their reality and confirmation. The crowding together of considerable numbers of men in camps and besieged cities, where, to all the horrors of war, fatigue, famine, and despair are added; — the privations and sufferings consequent upon military operations in general, especially when these are associated with defeat and mental depression — are causes which have been known so frequently to give rise to malignant contagious diseases, and to be the occasions of their spreading, that the connexion has become proverbial; and the appearance of the pestilence has justly been regarded as an almost necessary consequence of drawing the sword. There is scarcely any instance, says Sir John Pringle, of a town being long invested without some malady of this kind breaking out. In this way arose the plague at Athens, as described by Thucydides. In a similar state of things appears to have originated that fearful disease, which has been traced to the troops of

Charles VIII. engaged in the siege of Naples in 1494, and from thence spread so rapidly over Europe, and with such dreadful devastation, that to use the words of Dr. Traill, "it seemed to threaten the extirpation of the whole civilized world, and was by many attributed to the hand of heaven inflicting punishment for the enormous flagitiousness of mankind."

The history of small-pox affords another case in point; and its connexion with Mahometanism is not a little remarkable. This disease first appeared in the Abyssinian army besieging Mecca, two months before the birth of Mahomet; and thus contemporaneous with the Prophet, was speedily spread abroad by his reckless adherents, who conferred it on the conquered along with the faith for which they fought. Introduced into Europe by the successes of the Saracens in Sicily and Spain, and its extension promoted by the mistaken zeal of the infatuated Crusaders, it became naturalized amongst us, and was subsequently carried to America by the merciless followers of the inhuman Cortez — a scourge more severe than either the fire or the sword. Thus associated and propagated — the companion of warfare and wickedness — we may well view it with no ordinary feelings of horror, and might naturally expect that many centuries of comparative peace must needs elapse, before a disease so virulent and so widely sown would be found to lay aside its formidable character. In process of time, the nation

which first disseminated the contagion, supplied also a remedy, and inoculation was imported from the capital of Turkey, into that of almost every country in Europe. Happily, however, for the welfare of our race, the century which saw the adoption of one remedy, witnessed also the application of another — one of much greater value, and for which we are indebted to the observation of a physician, of whom his country may feel justly proud. In 1798, Dr. Jenner announced his discovery of “vaccination,” and from that period to the present, “variola” has no longer been an object of terror. But while we admire that provision in our economy by which a mild disease may be substituted for one that is severe, and the manner of the remedy, we must not omit to recognise, both in relation to the fact itself and the mode of its discovery, the overruling hand of that Providence, who, in compassion to human sufferings occasioned by human depravity, after that we had endured awhile the consequences of our folly, made known to us a remedy whereby we might be healed.

The wars which upon the continent of Europe succeeded the French Revolution, were attended more or less uniformly with febrile epidemics. During the first ten years, typhus appeared in various parts of Germany and Italy. Afterwards it prevailed in other European countries, very nearly as the seat of warlike operations was changed. In 1805 it appeared in Austria

after the battle of Austerlitz ; in 1806 and 1807 it broke out violently and mortally in Russia and in Poland. The war between France and Austria in 1809 was attended by a similar epidemic, and the miserable remains of the French army which survived the horrors of the retreat from Moscow in 1812 spread disease wherever they came.* The most formidable epidemic that ever occurred in England, the “Sudor Anglicanus,” was of similar origin. Scarcely had the destructive wars waged by the rival houses of York and Lancaster ceased, ere the distracted country was again plunged into similar scenes by the hostile intentions of the Earl of Richmond, among whose troops, on their landing at Milford Haven in 1485, this desolating pestilence first appeared, and in a short time is said to have swept off one third of the population. The late epidemic Cholera also was nursed in the lap of war. So obvious, indeed, was the connexion and progress of this disease with military operations, that, to use the words of a medical officer, it looked “as if the hand of Providence would thus signally mark his aversion to the calling of a soldier.” “How often,” remarks the same writer, “have we seen the expiring embers of the disease by this means fanned into a flame in a body of men, and again dispersed by it with fatal effect over a whole line of country ? These are facts for our

* See Dr. Craig's Pract. Phys. “War Plague,” Vol. I.

rulers to weigh and to act upon, they clothe war with additional horrors, and exhibit its destructive influence extending far beyond its immediate sphere of action."* War not only gives rise to disease, but wherever a tendency to disease exists, increases its force, and augments its fatality. This was proved by sad experience during the turmoil of colonial warfare, and has been severely felt by British troops in European countries subject to endemic diseases. Indirectly, war leads to disease by causing a scarcity of food — the crops being destroyed, or the land left uncultivated; and not unfrequently by occasioning national poverty, the resources of a country being lavishly squandered in reckless disregard of its best and truest interests. Hence, war produces famine, and famine produces pestilence; and thus these three—War, Famine, and Pestilence—the triple source of the most severe of human sufferings, acknowledge one common origin, and equally exhibit, in the conditions of the physical world, the consequences of neglecting moral laws; thereby illustrating, in a marked manner, the intimate relation that exists between them, and the unity of design which characterises both.

See Orton on Cholera, 2d Edition.

OF EPIDEMIC DISEASES.

WHEN a disease spreads from one province or kingdom to another, and attacks numbers of persons in succession, it is termed Epidemic, and appears to differ from an endemic disease chiefly in this, that while the latter is confined to its local origin, the former is migratory, as the Asiatic cholera, the influenza, &c. Epidemics are commonly supposed to be in some way connected with a certain occult state of the air, called, in apology for our ignorance, its "*epidemic constitution*," and which probably means no more than what Hippocrates intended by the expression "*το θεῖον*," understood by Galen to signify "an inscrutable cause in the air which produced these surprising effects."* Sydenham, speculating on this subject, says — "The constitutions of different years are various, yet they do not depend upon the degree of heat or cold, of dryness or humidity, which accompanies them, but probably originate from some occult and inexplicable changes wrought in the bowels of the earth itself, by which the atmosphere is contaminated with certain effluvia which predispose the bodies of men to one or other form of disease. This predisposition continues during the prevalence of the same consti-

* See Rees' Cyclopaedia, Art. *Epidemic*.

tution, which, in an uncertain period of time, is superseded by another." These "certain effluvia," however, it may be remarked, are even more "occult" than the changes suggested as their probable origin; nor does the simple fact observed by Dr. Prout, of a slight increase in the specific gravity of the air during the prevalence of the epidemic cholera in London, give much weight to Sydenham's supposition. An ingenious author, Noah Webster, has endeavoured to connect the occurrence of epidemics with the appearance of comets, the eruptions of volcanoes, the shocks of earthquakes, the existence of mildew on trees, the prevalence of mortality among fishes, and of murrain among cattle; and from the phenomena thus associated together, has deduced the existence of a general principle capable of accounting for them all, to which he has given the name of "*the pestilential principle*," diffused through the physical world. That water may, from certain physical changes capable of producing earthquakes and volcanic eruptions, become charged with poisonous gases, or be otherwise so altered that the fish which they contain are suddenly destroyed, is very possible. The condition in which shoals of fossil fishes are frequently found, has been thought to favour such an hypothesis; and that the air itself may suffer, in some way, from the same cause, is also possible; but we cannot attribute these effects, even supposing them to occur in this manner, to any

“pestilential principle,” such as that which the pains-taking historian of epidemics has laboured to convince us of. The connexion of earthquakes with epidemics would, even upon the author’s own showing, appear to be beneficial rather than otherwise; and if the disposition to disease be occasioned by a deficiency of positive electricity in the air, which seems very probable, these partial convulsions, by increasing the quantity, as Humboldt asserts, may be considered, in the hands of Providence, as a means of restoring the salubrity and serenity of the atmosphere. To an epidemic constitution of the air has been ascribed the sudden appearance and disappearance of fevers, and even of contagious eruptive diseases — as also the rapid decomposition which dead animal and vegetable substances are, in unhealthy seasons, observed to undergo.

But admitting that a tendency to disease is occasioned by particular states of the air, capable even at times of determining other causes to the production of a specific malady, it is obvious, from the numbers who escape this influence, though equally exposed to it, that it is not sufficient of itself to the development of disease, but requires the co-operation of more ordinary causes; and that it receives such co-operation is shown by the remarkable fact stated by Professor Alison, “that when such epidemics are most prevalent, most other diseases disappear.” If the sole cause of disease were in the air, it might seem impossible to

escape it; but so far is this from being the case, that experience seems to warrant the saying of the Chinese, that the pestilence *knew its victims*. Neither is such an hypothesis much in harmony with the course epidemics are often observed to take, moving along the ordinary routes, passing in the direction of rivers, still advancing though opposed by the wind, and often performing such eccentric movements as to baffle all attempts at their solution, and to show that we cannot attribute them to certain currents of air more altered than others by any epidemic constitution.

Severe epidemics have sometimes arisen from the use of unwholesome food, especially of degenerate grain; the “*feu sacre*” of the French historians, and the “*morbis hungaricus*,” were attributed to this cause, which Dr. Willan thought to have been the origin of the sweating sickness also, but Dr. Bateman ascribes this disease to starvation—in all probability, it was owing to war, with its consequent privations and sufferings. We have already had occasion to notice the influence which such a state of things has in giving an epidemic character to disease. In some instances, contagious diseases prevail in the epidemic form, by the same occasional causes acting upon many, and so calling into activity poisons already admitted into the system. “*Outbursts*,” says Dr. Henry, “have followed closely, for example, upon seasons of riot and intemperance, and have spread rapidly in situations where these diseases were confined to

few and scattered individuals." The effect of intemperance, in increasing the amount of disease, is well seen in the fever of this country : during the prevalence of an epidemic, it becomes still more obvious ; and in the fever of the West Indies, Dr. Mosely states, that the mortality in the different settlements may be calculated by this rule. That a contagious disease may become almost extinct, and yet again burst forth with renewed vigour, is shown by the fact, that the plague existed in London from 1603 to 1667, but raged only during certain intermediate years. Thus an epidemic may slumber in secret, until, " like a giant refreshed with wine," it is roused into frightful activity by the application of some exciting cause, and when again in motion cannot easily be checked.

Although the accurate investigation of phenomena, and the careful comparison of facts, have opened up to us many of nature's arcana, very many still remain to be discovered ; but if we are not able to find out the essential principle of a physical agent, or the conditions of its existence, we may ascertain its *modus operandi*, and thereby be enabled to obviate its influence. It has pleased the wise Author of our being, to furnish us with the means of ascertaining, in a progressive manner, whatever it is useful and profitable for us to know, and to make the acquisition of this knowledge an inexhaustible source of gratification and delight ; but the

practical application of it to the improvement of our moral and physical condition is the great object for which it was designed, and to which the manner of its communication has a natural tendency to lead. Unless this end be constantly kept in view, and perseveringly acted upon, we may, I think, be led to charge nature foolishly, and to attribute to the essential constitution of things, effects which exist only because we have occasioned them. Though an epidemic be still to us, "the pestilence that walketh in darkness," if it be good for man to know whence it cometh, this knowledge he will no doubt at some future period possess : in the meantime, it is most gratifying to know, that whatever tends to improve the condition of the poor and wretched — whatever increases the comforts and multiplies the enjoyments of life—whatever promotes the growth of morality and strengthens the principles of virtue — whatever, in short, adds to the amount of human happiness, prolongs also the period of human existence, removes the most deadly distempers, and renders all other diseases fewer and less fatal.

MORAL INFLUENCE OF A PESTILENCE.

THE prevalence of a severe Epidemic, for which no satisfactory cause can be assigned, is well calculated to give rise to the most serious reflection. However we may be disposed to view it, we may be fully assured that it comes not as a thing of chance, but to fulfil a purpose and intention best known to Him who ordereth all things. Nature, Aristotle wisely observes, does nothing in vain; nor can we suppose that the Author of Nature, whose providence is over all his works, rules otherwise than by causing all things to work together for the accomplishment of wise and benevolent ends. "Affliction," we may well believe, "cometh not forth of the dust, neither doth trouble spring out of the ground." For every effect there must be a cause, as every cause leads our minds to a prime mover of all: there can be no suffering without an occasion of it, no derangement of health without some violation of its rules. If the effect of this derangement be to make us more careful in future — the sense of pain to put us on our guard against the cause of it, there is an obvious principle of benevolence in this arrangement; and if we find that disease, just in proportion to its extent, has a similar tendency to promote the greater happiness of numbers, that is, to enforce the conditions on which this increased amount of happiness depends, we must

admit, that there is a very important design in such a dispensation, though the lesson thus taught be not acted upon to the extent that it ought. From the observations hitherto made, it must have been evident, that the direct tendency of those means most successfully opposed to the progress of disease, is to improve our condition much beyond what it would otherwise have been, had no check of this kind been given to vice, and no stimulus thereby afforded to virtue. In the absence of better motives, that of fear is a powerful incentive to human actions. In the event of an epidemic, such as the cholera, for instance, every one feels a personal interest in providing against the common enemy, and self-love may, for a time, act the part of universal charity ; but it is not improbable, that what was first prompted by interested motives may afterwards be continued from motives of real benevolence : the opportunity having once been given for such kindly exercise, it may for its own sake be continued ever after, to the great advantage both of the giver and receiver. In this way, a prevalent epidemic may become a felt benefit to many, as was the case with the poor in Edinburgh during the late cholera. At the same time, it cannot be denied that the physical and moral sufferings attending such a disease are great, very great, yet not so great as are the existing evils it is calculated to remedy, by bringing to light states of abject wretchedness and mi-

sery, which, hid in the dark abodes of guilt and poverty, were hitherto unnoticed or unknown, and thus leading to the removal of those sources of vice and immorality, of disease and infamy, which, like *foci* of perpetual *fomites*, from time to time spread their infection around. Moral motives, when allowed their proper scope, may go far to the removal of much that is amiss, both in our social relations and individual capacities; but higher motives than these are necessary to remedy many consequences of evil habits, which have accumulated around us. These motives we happily now possess, and all that seems necessary to their complete development is a more serious consideration of their importance. I need scarcely say that "Christian philanthropy" is here meant, for the exercise of which, the sufferings of frail humanity afford so ample and appropriate a field. The fear of an epidemic, however, may do more than prompt to the exercise of benevolence; it may be truly said to "bring down the high looks of the proud," as well as "to raise up the poor out of the dust:" it also acts directly upon our religious feelings; it promotes and often begets humility of mind; it draws us, if I may so say, nearer to our Maker, by awakening us to a more acute sense of our dependence upon Him; it urges us to a greater solicitude and earnestness in the performance of religious duties, — we are made to feel our need of help in time of trouble, and to seek it where

it can alone be found. The prevalence of a pestilence, fearful as it may sound, and terrible as it may prove in reality, affords the highest exercise for religious confidence and well-grounded hope; it furnishes an awful but a just illustration of the great and important truth, that "the things which are seen are temporal;" and while it forces us to confess the incomparable value of the things that are eternal, shows the worth of that *Word* which, in an hour like this, can speak peace to the soul, and cause the sufferer to smile on death, though clad in all the horrors of the pestilence. Let not, then, the student of history point to Athens, Florence, or Marseilles, and say, "Behold the moral influence of a plague," because a frenzy more frightful than the disease seized on the minds of the afflicted people, or because this trial, searching the heart, disclosed the secret wickedness within; but rather let him, with the philosophic Bertrand, deplore the dreadful guilt that brought such vengeance down.*

Greatly as the institution of hospitals, and other local means of alleviating disease, have contributed to diminish the mass of misery in the world, and to promote the best feelings of our nature, much yet remains to be done, and that chiefly in the way of prevention. "If the human race," observes Professor Alison, "be destined in future ages to possess greater wisdom

* See History of the Plague at Marseilles.

and happiness in this state of existence than at present, the value of this knowledge (of preventing diseases) may be expected to increase in the progress of time ; because there are many diseases which the experience of all ages has shown to be nearly beyond the power of medicine, but the causes of which are known, and, under certain circumstances, may be avoided ; and the conditions necessary for avoiding them are in a great measure in the power of communities, though beyond the power of many of the individuals composing them.”* May we not recognise, in the principle of union which is here pointed out, a very obvious tendency of certain diseases to promote the well-being of mankind collectively, by directing them to the right method of seeking it ? — can there be anything more likely to do this, than the occurrence of disease which may prove fatal to great numbers ? “ Men are not left,” Dr. Price remarks, “ as they might have been, to perish irretrievably by the calamities that happen to them, but it is put into their power, in numberless cases, to help one another, and to prevent the fatal effects that would follow particular calamities. A provision is made, in the spontaneous agency and benevolence of our fellow-creatures, for a great addition to the happiness of life, and diminution of its sufferings. And this itself becomes a still higher display of goodness, beyond which we cannot easily enlarge our ideas. For,

* Outlines of Pathology.

by establishing a plan wherein beings are thus left to be the voluntary causes of one another's happiness, room is given them for the exercise of beneficence, for gratifying the noblest affection in their natures, and enjoying the most godlike bliss of which they are capable. Had nature been framed agreeably to what might have appeared, to our narrow views, best and most productive of happiness, there would probably have been no such liableness to calamitous events, or dependencies of beings on one another, as we observe in it; and, consequently, the highest kind of happiness would have been wanting in it, and the very end we meant to secure would have been defeated.”*

* Dissertation on Providence.

DISEASE NOT PHYSICAL EVIL.

METAPHYSICIANS, from their manner of considering things abstractedly, appear to have puzzled themselves very unnecessarily about a subject, which, when viewed in relation to its cause, admits of an easy and satisfactory solution. "The origin of the evil which exists in the world," a question long debated in the schools, with no other advantage than the exercise it afforded, may be regarded as a dispute rather about words than things. We are taught from our infancy to believe, that disobedience to a command of our Creator was the origin of evil, and we have no reason to alter this belief from the studies of our riper years: the faith of the child becomes confirmed by the full persuasion of the man, that evil formed no part of God's creation, and that it exists now, from the same cause only as it existed at first, because men still lightly regard "the counsel of the Most Highest." A state of things at variance with moral and physical laws must be productive of pain and suffering; but the evil is not in these—the evil exists in the cause which gave rise to them, and which still continues them, and of the origin of this we can have no doubt at all. As to there being in nature some mysterious manichean principle, called "Physical Evil," the assumption is surely too absurd to need any serious refutation. "The constitution

of this world does not," says a recent author, "look like a system of optimism. It appears to be arranged, in all its departments, on the principle of slow and progressive improvement." But may not this very circumstance constitute it a system of optimism, if not so absolutely, yet so to us ; for if " the Creator has so arranged the external world, as to hold forth every *possible inducement* to man to cultivate his higher powers, nay, almost *to constrain* him to do so," as the same writer also remarks, and if their cultivation be " the source of his purest and intensest pleasures,"* then, whatever gives to these the most exercise, proportioned to their powers, and affords the greatest scope for their development, must be to a creature so constituted as to derive *his* happiness from these sources, a system of optimism, although at first sight it may not look like one ; and disease, as one of the causes so operating, must be regarded as a dispensation devised for our good. It not unfrequently happens, that what at one time appeared evil, when better understood, and its operation more fully seen, is considered so no longer ; thus, contagion may seem to be an evil, but if it lead to the mitigation and prevention of those diseases with which it is connected, we thenceforth view it in an opposite light. This, in fact, it has done, by giving rise to the establishment of fever hospitals,

* Combe " On the Constitution of Man."

and thus contagion itself, as Dr. Henry remarks, “ is no doubt permitted to exist, among other reasons, that it may be *overcome* by the vigorous use of those intellectual powers and faculties, with which man is so pre-eminently endowed,” and which, we may add, cannot be rightly exercised in any one direction, without the good effects thereof being felt in every other. Mr. Tucker, in his “ *Light of Nature*,” has shown that the pleasures which constitute satisfaction, are those in which we are active ; and this has been well followed up by another distinguished moralist, Dr. Paley, who remarks, that “ A world furnished with advantages on one side, and beset with difficulties, wants, and inconveniences on the other, is the proper abode of free, rational, and active natures, being the fittest to stimulate and exercise their faculties : the very refractoriness of the objects they have to deal with contributes to this purpose. A world in which nothing depended upon ourselves, however it might have suited an imaginary race of beings, would not have suited mankind.”* Dr. Paley thinks it is in this refractoriness that we discover “ the seed and principle of physical evil,” so far as it arises from that which is external ; but if it is by this refractoriness that physical relations are suited to us, surely that which makes them so cannot be a source of evil — the seed and principle of

* “ *Natural Theology*.”

physical evil must be sought for elsewhere, and not in the objects themselves. Dr. Brown is of opinion, that much of what is *termed* evil is referable to the uniform course of nature, or, in other words, to the influence of general laws not possessing “the advantage of an uniform adaptation to the particular circumstances of the moment, or to the particular circumstances of the individual.”*

But we have no reason whatever to suppose that the Deity has framed laws for the government of the world, which are not applicable to its entire economy, or that circumstances can occur in which it is desirable exceptions should be made.† If these general laws are at any time productive of pain and suffering, their known capability and tendency to produce the contrary, when voluntary agents act in harmony with them, and the admitted uniformity of their effects, show that the seeming evil originates not from any inapplicability on their part to suit the varying circumstances of individuals, but from individuals having brought themselves into circumstances in which these very laws convict them of having erred, by the sufferings which are thereby occasioned. Such seeming evils may therefore be regarded as among the greatest advantages conferred by general laws—as the natural remedies appointed for

* Lectures on Moral Philosophy.

† We do not here include those occasional interpositions of the Deity for effecting specific purposes, which, though they form no part of the course of nature, do nevertheless form a part of the government of the world, as shown by the enlarged experience of ages.

the correction and removal of whatever is opposed to our real happiness, or to that state in which the human will acts in harmony with the divine. Not only reason, but “even our hearts,” as Dr. Brown rightly remarks, “tell us that the world in which man is *best* placed, is a world like that in which he is placed—a world in which, though he may occasionally have to struggle with affliction, he may in that very struggle have the delight of knowing that he is more virtuous to-day than he was yesterday—that he is rising in excellence—that there are multitudes whom his example will animate to similar victory over that evil within the heart, which is the only evil that deserves our detestation or our fear.” In the refractoriness seated in the human heart we must seek for the seed and principle of evil: hence disordered moral faculties, diseased bodily organs; hence the sickness, and suffering, and sorrow that are in the world. But of all these indications, those furnished by disease are commonly the most conspicuous and the most convincing: this is their importance in a moral point of view, and hence the assistance they afford to the obtaining that best and most satisfactory of all victories—the overcoming evil with good.

OF PARTICULAR DISEASES.

As diseases not connected with any endemic influence, infection, or contagion, come, more or less, within the observation of every one, their occasional causes are much better understood, and more universally admitted; indeed, the dependence of these diseases on the conduct of individuals is so very obvious, as to lead us, *à priori*, to suspect that, in the diseases already spoken of, the causes of which are not so self-evident, the same principle may very much prevail. It may appear unnecessary to trace the effects of intemperance, irregular habits, depraved passions, and the neglect of whatever is essential to the preservation of health, in those manifold derangements of function, and finally alterations of structure, which are so well known to be their inevitable consequences — to show, for instance, that consumption, one of the most fatal and frequent diseases in these islands, may arise from mental depression, particularly if strong and of long continuance — from the want of proper air, exercise, and nourishment; that exposure to cold and wet may also occasion it, by laying the foundation of other maladies which sometimes end in this; — that when those means which nature has appointed for the support of our bodies and the perpetuation of our race, are converted into occasions of gratifying intemperate desires, and

corrupt passions, that which should have been for our welfare becomes an occasion of falling, — our health is destroyed and our happiness gone ; — that by neglect of exercise the system is weakened, its functions cease to be performed in a healthy manner, and the mind sympathising with the body, the duties of life become irksome, and premature decay closes the scene ; — that plethora, apoplexy, paralysis, gout, dropsy, and a host of other affections, are occasioned by habitual excess in food and drink ; — that cutaneous diseases are commonly the joint production of intemperance and filth, to which also dissolute morals and domestic vexations do greatly contribute ;* — that diseases of the heart, if not occasioned, are invariably accelerated by allowing the angry and vindictive passions to rule over us, and thus, while they poison the very “issues of life,” not unfrequently extinguish it entirely ; — and that not diseases of the heart only, but likewise diseases of the brain, liver, stomach, and bowels, often originate from uncontrolled passions of every description. These and many other similar facts, are so well known that it is unnecessary to enlarge upon them here ; a mere glance at the catalogue of human maladies is sufficient to show, that they are mostly of our own seeking, and should be regarded as punishments we have brought upon ourselves, the tendency of which is, as in the case of those diseases previously mentioned, to lessen the causes

* See Plumbe on Diseases of the Skin, p. 202, 4th Edition.

which have occasioned them. But these punishments are not always confined to the original transgressors ; in many instances they descend to their children, and are thus transmitted through several generations. In this way, as Dr. Gregory observes, "*sæpe delicta majorum immerita lui-mus ;*" hence the moral motives for avoiding disease are two-fold, and a conscientious regard to the welfare of our successors is found to be inseparable from a regard to our own. This disposition, however, to particular diseases (for it is comparatively rare that hereditary disease is congenital), may be compatible with long life and much real enjoyment, provided all exciting causes are carefully avoided. Thus do we again read, in our own eventful history, the character of that gracious Governor, who in the midst of judgment still remembereth mercy.

The frequent dependence of mental disease on depraved moral habits is too obvious to need a lengthened illustration. When we find that fatuity, and mania in all its forms, often take their rise from the unchecked recurrence of improper thoughts, from the licentious workings of unhallowed passions, from profligacy and open profaneness, — that the repeated railings of an unruly tongue may pass into the ravings of a maddened spirit, — or that the stifled whispers of the "*still small voice,*" may end at length in frenzy or despair — we cannot but recognise the importance of those moral motives which have

been neglected, and must acknowledge the justice of that law, which punishes with such seeming severity a course of conduct long and wilfully persisted in.

But if we were required to point out any one particular vice which more than another crowds the cells of our lunatic asylums with incurable inmates, we should instance that by which human nature is despoiled of its supremacy, and the intellectual lords of the creation degraded to the level of the brutes. It is from indulgence in spirituous liquors, that by far the greater number of confirmed insanities arise, and exhibit that particular character of religious horror, which has led superficial observers to mistake the disease for that of true religious mania, and has caused the abettors of infidelity unblushingly to affirm that it is religion which drives men mad. The true *monomania religiosa* is a very rare disease; not so, however, that religious horror often mistaken for it, and arising, as Dr. Traill has well remarked, not from the cultivation of religion, but from the neglect of it. Wretched indeed must be the philosophy of those who can despise what they have never felt the force of, and treat with contempt what the noblest minds have prized even more than life itself. For in what does religion consist? Does it not consist in the exercise of those affections, and qualities, and energies of the mind,—in the following out those duties, and principles, and objects of

action, which physicians themselves know to be the most effectual means, not only of preserving health, and of warding off external causes of disease, but also of supporting us under affliction when it cometh, and of carrying us safely through? Does not religion abound in hope, in joy, and in peace?—and what can be more desirable than these things, even in a medical point of view?

Disease, the result of undue cerebral excitement, is not, as a certain author has said, “the tax which man is *doomed* to pay for extraordinary elevation of intellect or acquirement,”* but is in fact the punishment he has inflicted on himself by having taxed his intellect too severely. The organ of the mind, holding a double relation, has its natural stimulus and conditions of healthy action, and its operations are developed, strengthened, and improved, by exercise within certain limits; but if these be exceeded, the vital properties of the brain become enfeebled, incapacity follows, ideas are no longer associated together in their proper order, nor preserve their relative importance; and the individual who was once the highly-gifted orator, the indefatigable statesman, or the laborious student, by attempting more than he is able to grasp, loses all which his diligence had acquired, and thus defeats the very purpose he had hoped to attain.

It should ever be remembered, that a certain diversity of thought and occupation is necessary

* Palmer's “Popular Illustrations of Medicine.”

to the health both of the mind and body, and that neither can be long preserved without a due attention to intervals of relaxation and repose ; success in our pursuits probably depending as much on the right employment of these, as on the hours themselves which are spent in labour. We must not omit to mention here, the importance of that periodic rest which religion enjoins : considered merely as a means of preventing disease, consequent on incessant labour and daily toil, it is an antidote of the highest value, felt where most needed ; and when it is viewed in relation to that “refreshing” which a Sabbath well spent is so certain to bring, we cannot be surprised that the neglect of it should have led to the most melancholy and fatal consequences. A diversity of occupation is particularly called for in those employments which have a peculiar tendency to occasion disease, and, rightly managed, would probably obviate all or many of their inconveniences ; but much of the present suffering attributed to them ought rather to be ascribed to the enervating relaxations resorted to in the intervals of labour, and to the pernicious practice of drinking spirits. Among the higher ranks of society, with whom pleasure is business, the diseases thence arising far outnumber those derived from other sources, — here fashion is the great leveller, and under her rule, climate and constitution are charged with producing effects, which dress and dissipation together occasion.

OF DISEASE IN GENERAL.

IF the first faint monitor of injured health be listened to, disease, thus shown to have begun, may in most cases be easily and quickly removed : a fever may be cut short, or an inflammation prevented. It is by delay in the application of remedies that very many acute diseases cannot afterwards be checked by any mode of treatment whatever : fortunately mere functional disease is rarely fatal, and, in almost all cases, this would appear to precede organic lesion, and is readily subdued by means which, in instances of the latter, are quite unavailing. Very frequently, mere functional derangements entirely disappear on the removal of the occasional cause ; often the efforts which nature makes to restore itself remove both the cause and its effects, and diseases sometimes get well under whatever treatment may be adopted. The benevolent tendency of the laws of vital action is also well seen in the ultimate effect of a noxious influence being very often the restoration of health, and in the primary effect of an injury being the first of a series of changes necessary to repair or remove it, as is shown in the healing of wounds and broken bones, and the expulsion of foreign substances from the body ; these processes taking place in a manner calculated to call forth not only our admiration, but our gratitude also. The way in which the ulti-

mate spontaneous favourable result of diseases is brought about appears to vary : sometimes the morbid actions last a while, and then spontaneously subside, as in the resolution of inflammation ; and this result obtains when the constitution of the patient is itself favourable to this end. " If a slight redness," says Andral, " develop itself in any point whatever of the skin, it will terminate promptly in resolution, if the patient's strength be still good ; on the contrary, it will terminate in ulceration and gangrene, if the patient be in a state of less or greater debility ;" and so important, indeed, is the state of the innervation in relation to prognosis, that it has been suggested whether the principle should not be laid down as established, that the adynamic or ataxic phenomena which occur, depend less on the nature and intensity of the organic lesion than on the condition in which the lesion, slight or severe, finds the innervation. That it is to the morbid disposition produced in the system that we should seek for the cause of the different symptoms, more than to the local lesion, is a fact of much practical importance, especially in the treatment of fevers. When morbid matters have gained admission into the system, they not unfrequently remain latent, unless developed by concurrent causes : at other times their influence is more or less partial, and they would appear to undergo decomposition ; but occasionally the noxious influence they exert is

greater than the system is able to withstand, and vitality is destroyed before the time when that influence would materially abate, and healthy action be re-established ; as in malignant fevers, cholera, and the plague. The occurrence of some intercurrent affection during the course of a primary disease is not unfrequently the cause of its fatal termination ; these secondary affections requiring a very opposite plan of treatment, and sometimes being so masked as to escape notice until too late to check their progress : thus, for instance, affections of the brain in fever are very apt to obscure those of the chest. The principal reason why, in some diseases, no salutary tendency is ever seen, would appear to be, from the blood having lost its natural vital properties, and become unfit for those changes by which its natural condition, after being altered, is regained, and by which the lesions of textures, resulting from previous disease, are, in healthy constitutions, gradually diminished or almost removed : thus it is that scrofula and cancer differ from inflammation and ulceration. The state of the constitution in relation to many local diseases is also of primary importance : often these may be said to be but the outward signs of an inward depravity, which nature no longer suffers to remain concealed.

It has been remarked, that in states of disease “ the solids of the body take an action as *near* to the true one as the difficulties and dis-

organization with which they have to contend will allow of;" but they even do more than this—they show a disposition to overcome these obstacles. Nor is the circumstance that their action requires at times to be altered, increased, or checked, opposed to the excellence of that vital principle by which the living system is upheld, and its powers directed—a principle once raised to the rank of an "intellectual Archæus," and still known in its conservative capacity as the *vis naturæ medicatrix*, which philosophers, however they might formerly differ in explaining, were united in applauding; but is an additional argument in its favour, showing that it admits of modifications to man of the deepest interest, in thus permitting him to cultivate the practice of the healing art. If nature were immovable, medicine would be useless, and disease once begun must needs run its course; but nature, though herself the great teacher, consents also to be taught, and though leading others, may herself be led. Yet we must not suppose that the physician cures the disease, or that the surgeon heals the wound: it is nature which effects both—these are but her ministers, employed to watch her movements, and, where necessary, to direct her steps.

OF PAIN.

IT is a very true, though a very common remark, that we are formed not only to live, but to live with enjoyment. Our entire economy declares this, and the observation may be extended to the whole sensitive creation. With beings that have little or no remembrance of the past, and no looking forward to a future, the amount of "the pleasures of sense" which each could enjoy in a given period, appears to have been the principle by which their production was regulated: but in the case of man the rule is different; for though the same general principle of conferring the greatest possible amount of happiness capable of being possessed by him is discoverable, yet it is not always so apparent, from the circumstance that the "pleasures of sense" form the least important part of that happiness. In man, placed between the visible and the invisible world, and intimately connected with both, the pleasures of sense are permitted only so far as they are compatible with his higher relations, and the working out of a progression passing from time to eternity. In an animal whose existence extends not beyond the present, and whose sense of time is bounded by the *now*, every appreciable portion of life may be considered as constituting so many distinct existences, and every diminution of pleasurable sensation within those limits may be regarded as a real privation, though the pain it suffers be

far outbalanced by the amount of the pleasure which existence confers. In animals higher in the scale of creation, susceptibility to pain increases with the importance of the part it performs and its uses in the animal economy, until we arrive at man, in whom, from his complex nature, his lofty intellect, and exquisite organization, the purpose it fulfils is proportionably great, and having a reference to both these states, is often the means of procuring for him, more desirable and enduring advantages than any he would otherwise have obtained. "If the senses," says Dr. Johnson, "were feasted with perpetual pleasures, they would always keep the mind in subjection," and "we should pass on from crime to crime, heedless and remorseless, if misery did not stand in our way, and our pains admonish us of our folly."* It is in this way that our bodily ailments become morally so important, and may be considered, Dr. Brown remarks, "almost as a sort of bodily conscience," which reproaches us for the past, and in doing so calls to beware of the future.

When pain follows in the sequel of pleasure, "*fidelis quamvis ingratus monitor*," and marking the boundary between virtue and vice, strengthens the former and warns from the latter, the goodness of the Creator in having established this connexion becomes apparent, and may lead us to infer the benevolent purpose of pain in other instances. But what is pain? The phy-

* Idler, Nos. 83, 89.

siologist tells us, it is an exaltation of sensibility, and asks, who would be without nerves, in order that he might escape pain? In a world like ours, pain may be considered as the very *primum mobile* of all spontaneous movements, without which an universal torpor would prevail, and the whole sentient creation remain "as still as a stone;" for where the pleasure of rest ends, that of motion begins, and the enjoyment common to myriads of animated beings probably consists in these alternations, modified by a specific excitability in relation to certain physical agents, which thus renders their brief existence a feast of pleasurable sensations. Pain, as a means of prompting to activity, where that activity is essential to happiness, possesses a wide sphere of operation, and is more or less felt by all; in this way, nature counsels us to provide for our wants, by causing privation to be attended with pain. The annexing this condition to injuries and the means of destruction, is, as Dr. Paley observes, "a salutary provision, in as much as it teaches vigilance and caution, and both gives notice of danger, and excites those endeavours which may be necessary to preservation." "Hinc inter presidia vitæ nonnunquam numerandus."

In a therapeutic point of view, a moderate amount of pain would often appear to act as an useful auxiliary in restoring healthy action; nor should its influence on the mind be overlooked, if Dr. Gregory was right in supposing,

that it contributes "*ad claritatem et acumen ingenii.*" But however this may be, it is very certain, that pain is capable of shedding a satisfaction over intervals of ease, which few enjoyments exceed: the general cheerfulness observed in the wards of a surgical hospital, among those patients who are comparatively free from pain, is, I think, an evidence of this. The degree of suffering which pain occasions depends very much on the state of the mind, and the fortitude with which it is borne. The stoics could so reason on this subject, as to convert it into an occasion of triumph; but though a moral courage, capable of enduring pain, and of profiting by it, is greatly to be wished, yet indifference to pain is neither desirable nor enviable, and may defeat the very object of its dispensation. Upon the whole, pain seems appointed to take place only where and when it may be useful, and not to occasion unnecessary suffering; — by its variety it informs us of its seat, and of the kind of morbid action which produces it. "The sense of pain is in proportion to the magnitude of the disease, only within certain limits. The extremity of disease may abate or even obliterate the sense of pain altogether."—"Surely," concludes Dr. Latham, "there is a benevolent intention conspicuous in all this."*

* See "Lectures on subjects connected with Clinical Medicine."

ADVANTAGES OF DISEASE.

BISHOP BUTLER well observes, that “God preserves our lives by the use of appointed means, and in this way gives us the possession and enjoyment of those things in which our natural good consists.” “By prudence and care we may for the most part pass our days in tolerable ease and quiet; or, on the contrary, we may by rashness, ungovernable passion, wilfulness, and even by negligence, make ourselves as miserable as we please.”* This is undoubtedly true: whatever we enjoy, and a great part of what we suffer, is put in our own power; so that “the divine scheme is plainly, that events shall, to a certain degree, be what created agents make them.”† “The great amount of those evils which vex and agitate man, *emanate*,” says Dr. Chalmers, “from the fountain of his own heart; and come forth, *not of a distempered material*, but of a distempered moral economy.”‡ Numerous authorities might be quoted to the same effect, that “God sends not ill, if rightly understood;” and we have now to point out some of those advantages occasioned by the existence and occasional prevalence of a state of things which, though regarded as a “partial evil,” contributes to the “universal good.”

We have endeavoured, in the course of this

* Butler's Analogy. † Price on Providence. ‡ Bridgewater Treatise.

essay, to show that disease is not an evil, but, on the contrary, that it is an appointed remedy for evils; that is, for the voluntary acts of rational agents at variance with moral and physical laws, the consequences of which are seen in the sufferings to which human beings are subject: these sufferings having, by the benevolent will of the All-wise Governor of the World, a natural tendency to occasion the removal of the causes which have given rise to them, and thus to make mankind, on the whole, better and happier.

The advantages resulting from disease are two-fold—the immediate and the ultimate; the former arise in consequence of the part which disease acts in keeping up some sense of religion and of moral obligation—in stimulating to virtue, and thereby strengthening every good principle—in promoting benevolence, and affording a wide field for the cultivation of the humane feelings—and, in relation to the sufferer, its influence in changing the dispositions and affections of the heart, one of its most important and highest offices—together with the assistance it affords to the progress of science, and the promotion of the useful arts generally: the latter, or its ultimate advantage, is the study of its laws, and thereby the perception and removal of the causes which have occasioned it. For, though a necessity for the existence of disease, in the present condition of the world, be indeed very apparent, yet no one would thence argue that this necessity

must continue, when the ultimate object of disease has been gained, and mankind have arrived at a much higher state of virtue and happiness than they now enjoy ; and that they will attain to such a state, is extremely probable, from the capacity which the human mind would appear possess for a greater degree of felicity than the world at present exhibits ; as also from the progress which has already been made in the improved condition of large portions of mankind, indicated by their increased healthiness and longevity—the diminution of crime, and the better regulation of their social and political relations ; but more especially may this be expected from the extension of Christianity, whose benign influence, when duly appreciated and acted upon, may truly be said to have a *transforming* effect upon the human character, and, viewed in connexion with disease, has mitigated its worst features and alleviated its bitterest pains.

Disease has by some writers been thought *necessary to constitute* this life a “state of trial :” to me it appears rather to *show* that it is so, than to make it such. But allowing that it may be necessary to this purpose now, it does not follow that it always must be : the probationary character of the present life may still continue, though the means which make it probationary be altered. Disease, as requiring the exercise of patience, resignation, and hope—and that often under the most difficult circumstances — does certainly act

as a test of those virtues ; and when occurring in the fearful form of an epidemic, such as that of the great mortality or black death in the 14th century, may be regarded as a *trial* of mankind generally, in respect of their progress in religion, morals, and civilization, essential to that training up for eternity which is the great object of their being here, and is undoubtedly useful in directing their attention more decidedly to it. But the essential character of disease is a method of correction, of conviction, and of warning — a remedial, and not an arbitrary measure—a punishment, indeed, but one in which justice is so tempered with mercy, that goodness, and not severity, is its predominant character—a punishment which, while it points out the sources of suffering, enforces their removal, and gradually ceases as its ultimate effect becomes more and more apparent. This effect is seen not only in relation to individuals and families, but also to communities ;—thus the improved state of our great towns has entirely banished those depopulating diseases to which they were once subject ; agriculture has driven away others ; and the strict observance of a well-regulated quarantine has long made the plague a stranger to our land. It is not unreasonable, therefore, to suppose, that many other diseases still very prevalent might, by proper care and attention to their causes, be removed or eradicated ; and since health, as Democritus saith, enlargeth the understanding, that a time may

come when disease will wholly disappear, the object of its existence being fully accomplished. At present its uses are manifold, both in a religious and moral point of view, and also as regards the progress of human affairs generally. Some of these uses have already been pointed out — others yet remain to be mentioned.

A disposition to ascribe the misfortunes of human life to the influence of supernatural beings unfavourably disposed towards the sufferers, would appear to indicate, in those rude states of society among which it occurs, that instinctive conviction of the existence of a power supreme, which, though disguised by fable and corrupted by superstition, cannot be entirely extinguished. Many circumstances, no doubt, help to support and keep alive this feeling ; but diseases, from the occasional suddenness of their attacks, the obscurity of their causes, the pain and alarm they occasion, and the suggestions of punishment which they seem to convey, appear more particularly calculated to do this ; in some minds working by fear, in others by better motives. The propitiatory sacrifices of most nations point out this principle ; a desire to avert the anger of the gods, and to procure the removal of those maladies which were believed to be the consequences of having offended them. And this was probably one reason why in the early ages the priests were the only physicians. A wish for such consolation as religion might be able to afford, would

also bring its ministers into the society of the sick ; and from this intercourse, aided by observation and reflection, and the desire to diminish suffering, we might expect a knowledge of disease to be acquired, which would entitle them to respect in either capacity : nor would the lessons taught by disease be the less profitable, either to the suffering patient or to the benevolent practitioner, though its pathology were as obscure as the treatment itself empirical, provided the one felt the moral force of what the other was anxious to alleviate.* “ If the kind affections,” remarks Dr. Brown, “ be inestimable, *that* also must be inestimable by which these affections are best promoted. The grief of one, it must be remembered, may be the pity of many, and may foster therefore the benevolence of many—so careful is

* Dr. Latham (Lectures, p. 38) has some very excellent remarks on the moral influence of clinical study. “ If the interest of attending the sick,” he asks, “ has led to the highest skill, and formed the consummate practitioner, why need it go further ? ” “ But what if humanity should warm it ? Then this interest, this excitement, this intellectual pleasure, is exalted into a principle, and invested with a moral motive, and passes into the heart. What if it be carried still further ? what if religion should animate it ? Why, then happy indeed is that man whose mind, whose moral nature, and whose spiritual being, are all harmoniously engaged in the daily business of his life—with whom the same act has become his own happiness, a dispensation of mercy to his fellow-creatures, and a worship of God. Such a man,” he remarks to his youthful auditory, “ any of you may be ; but you must begin by learning to stand by the sick-bed, and make it your delight.” To these admirable observations on the exercise of Christian benevolence, we would merely add the sentence of the Saviour himself—“ Forasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me,” and leave the reader to draw his own conclusions.

nature to produce what is *good in itself*, at the least expense of individual suffering." But although suffering, however occasioned, and wherever occurring, helps to form "a school of virtue," and contributes to render the world, in its present state, a place of moral discipline, yet it would seem to have a higher object still in the relation which it holds to the hopes and expectations of eternity. We must not, however, overlook the primary object of suffering—the removal of the causes which have occasioned it—when we see the salutary development of secondary intentions in its "ameliorating influence" on the individual who endures, and its humanizing effect on those who sympathize with him. Suffering shows the insufficiency of earthly things to make us truly happy, and disposes us to seek for happiness where "true joys are to be found." So intimately connected, indeed, is this state with certain conditions of the mind and moral faculties, which lead to the acquisition of higher happiness, by predisposing the mind to receive it, and putting us into a capacity to enjoy it, that many persons have considered suffering an appointed means to this end. But the connexion does not, I think, follow of necessity: there is no reason that it *must* be so; but only that, by the overruling hand of a benevolent Providence, it *may* be so, and therefore in very many instances is so. Often, in this way, has the sick-chamber been made a place of wholesome correction, from which

the sufferer has gone forth again into the busy world, restored in body and renewed in mind, a better and a happier being than when he left it. There are few more favourable opportunities afforded for the production of religious impressions than during the convalescence from disease: the mind is then predisposed by a sense of gratitude to listen with attention to what it before rejected, and to receive with meekness and gladness those words of eternal life, which the near prospect of death has shown to be most precious.

The influence of disease in promoting the progress of the arts, in stimulating to the cultivation of science, and in leading to various civil and social improvements, requires also to be noticed. A desire to discover means for the removal of disease would appear to have been the first serious inducement to the scientific study of nature. Thus arose botany, once cultivated only by the physician, whose researches in the vegetable kingdom have been richly rewarded by the profusion of remedies submitted to his choice. Chemistry and mineralogy, though possibly dating from other designs, have been greatly promoted by the same praiseworthy motive, and increased importance has thereby been given to the study of natural history generally. But perhaps the most important achievement of human industry, urged onward to discover and provide for the occasions of disease, is the knowledge we have acquired of the structure and func-

tions of our own bodies. Anatomy and physiology have thus become sciences not only of great and permanent importance in themselves, but possessing a still higher interest, in that they have made known to us the most admirable contrivances of creative wisdom, and have furnished a most convincing evidence of the benevolent intentions of the Deity. They show, as Sir Charles Bell has well said, "that the care of the most tender parent is in nothing to be compared with those provisions for our enjoyment and safety, which it is not only beyond the ingenuity of man to supply to himself, but which he can hardly comprehend, while he profits by them."* To the same source may be ascribed the progress of comparative anatomy, with the assistance thence derived to other sciences, and the illustration it has afforded of the ancient history of the globe we inhabit. Mechanical science has also participated in the same, by the application of its principles to the most humane purposes, the removal of pain and mitigation of suffering. Nor has literature passed unnoticed. The attention here bestowed by medicine, while it has helped to raise the one, has conferred honour upon the other. To the influence of disease, in drawing attention to its occasional causes, and enforcing the means of prevention, are no doubt owing many of the improvements in building and ventilating houses; the formation of sewers and

* Bridgewater Treatise.

drains, and other matters tending to the increased comfort and convenience of the population generally, whereby many sources of physical depression and moral depravity have been done away: health and cheerfulness have been promoted, where sickness and suffering previously prevailed; improved habits and manners have been introduced; the tone of moral feeling has been raised, and human happiness considerably augmented. In short, could we trace this influential agent, disease, through all its workings, we should probably find, that in drawing forth the energies of the human mind, in developing its faculties, and promoting our welfare, it has a far wider sphere of operation, and performs a much more important part, than we could *a priori* have suspected; and though there be some things about disease, to us at present inscrutable, it ought to satisfy us, that we see and know enough of its uses and tendency, to be fully persuaded that it acts for our good. “The further advances have been made in the knowledge of nature, and the more open it has been laid to our view, the more glorious it has appeared, and the stronger proofs have been discovered of the perfections of its author.”* So that if we were able to discover the connexions and dependencies of all its parts, seeming discrepancies would disappear, and the whole scheme be viewed in all its just proportions — a work of wisdom and of marvellous skill.

* Price on Providence.

OF DISEASE AS THE FORERUNNER OF DEATH.

“THE pains of sickness, or decrepitude of age,” observes Dr. Buckland, “are the usual precursors of death, resulting from decay: these, in the human race alone, are susceptible of alleviation from internal sources of hope and consolation, and give exercise to some of the highest charities and most tender sympathies of humanity.” With creatures whose lives are, as it were, made up of a number of distinct existencies, and whose enjoyment consists in a sense of present gratification, the case is not so: to them no advantage would result from such an arrangement, and they are therefore removed suddenly. “Death itself,” says Dr. Paley, “as a mode of removal and of succession, is so connected with the whole order of our animal world, that almost every thing in that world must be changed, to be able to do without it. Brutes,” he remarks, “seem to be armed with the apprehension of death, just sufficiently to put them upon the means of preservation, and no farther:—but would a human being wish to purchase this immunity at the expense of those mental powers which enable him to look forward to the future.” Now, one of the apparent uses of disease is to remove this apprehension when it is no longer serviceable, and reconcile us to death when it can be no longer avoided. As disease advances, the

love of life diminishes, its enjoyments gradually ceasing, and with them the wish for its continuance. The horror of death, felt in the midst of health, is thus taken away ; for, to the sick man death is but the last of a series of changes, making the transition easy, and perhaps insensible. Disease, though it does not allow the moment of death to be exactly foreseen, prevents its being so very sudden as to derange the relations of society : “ it gives,” as Dr. Brown has remarked, “ to the circumstances that precede death, that moderate terror which is necessary for saving from rash exposure to them, and still leaving death itself as an event which it is in our power to avoid, perhaps for a time, but not wholly to avoid.” But can the terrors of death be in no other way removed than by the wasting hand of disease ? Nature may indeed shudder at the prospect of a sudden dissolution when life hath still its charms ; but what is certain to take place at some time, and may happen at any time, can at no time be called sudden, unless it finds us unprepared. Death implies separation, and the loss of those we love must be accompanied with sorrow : but it is a sorrow which will soon be turned into joy ; for we know that the separation will not be for long,—that those who have loved here, will love again hereafter — and those who have joined in sweet society on earth, will enjoy a still sweeter society together in that Heaven, where pain and sickness will be known no more, the causes of them having ceased to exist.

CONCLUDING REMARKS.

WE have endeavoured, in the foregoing observations, to show, —

1st, That diseases are, in the great majority of cases, traceable to the neglect of moral and physical laws, and are therefore not to be considered evils, but the right remedies for evils, that is, for states of things at variance with those laws, their ultimate effect being to increase the capacity of the human species for happiness, by causing a gradual removal of whatever is opposed to it.

2^d, That the phenomena of disease are so regulated and ordered as to produce the least possible inconvenience compatible with the attainment of the proposed end.

3^d, That the very circumstance of their production has been made to furnish good to mankind, independent of their ultimate object; and, while the necessity for their existence continues, they are made conducive to the furtherance of our highest hopes.

We trust that these have been made sufficiently evident, and that the religious and moral importance of disease has been shown to be an

essential part of the *present* constitution of things, and tending, when the human will acts in concert with the laws which govern them, to increase our happiness here, and to render us more meet for that happiness which shall be hereafter. "If one train of thinking," says Dr. Paley, "be more desirable than another, it is that which regards the phenomena of nature with a constant reference to a supreme intelligent Author. To have made this the ruling or habitual sentiment of our minds, is to have laid the foundation of every thing which is religious. The world thenceforth becomes a temple, and life itself one continued act of adoration." Far happier is the sick man who can thus commune with his Maker in the hour of suffering, than he who, in the midst of health, and in the full enjoyment of worldly gratifications, is a stranger to this state of mind: the steadfast confidence of the former in the hope set before him, his patience and composure under affliction and pain, when these apparently come uninvited, present a cultivation of the moral nature, sufficient to convince us that, as regards our ultimate happiness, disease may in some cases be preferable to health.

To conclude: it should be the leading object in all our studies, both of mental and physical phenomena, to discover the principles by which they are governed, and to act in harmony with these results. By this growing conformity of

the human to the Divine will, we might hope to escape much of the suffering to which we are now exposed, to realize far higher states of happiness here than any we have hitherto attained, and finally to pass from these to an immortal still-ascending progression; for "the soul," as Mr. Addison has beautifully remarked — "the soul, considered with its Creator, is like one of those mathematical lines* that may draw nearer to another for all eternity, without touching it: and can there be a thought so transporting as to consider ourselves in these perpetual approaches to Him, who is not only the standard of perfection but of happiness?"†

* Assymptotes of the Hyperbola. † Spectator, No. 111.

THE END.



