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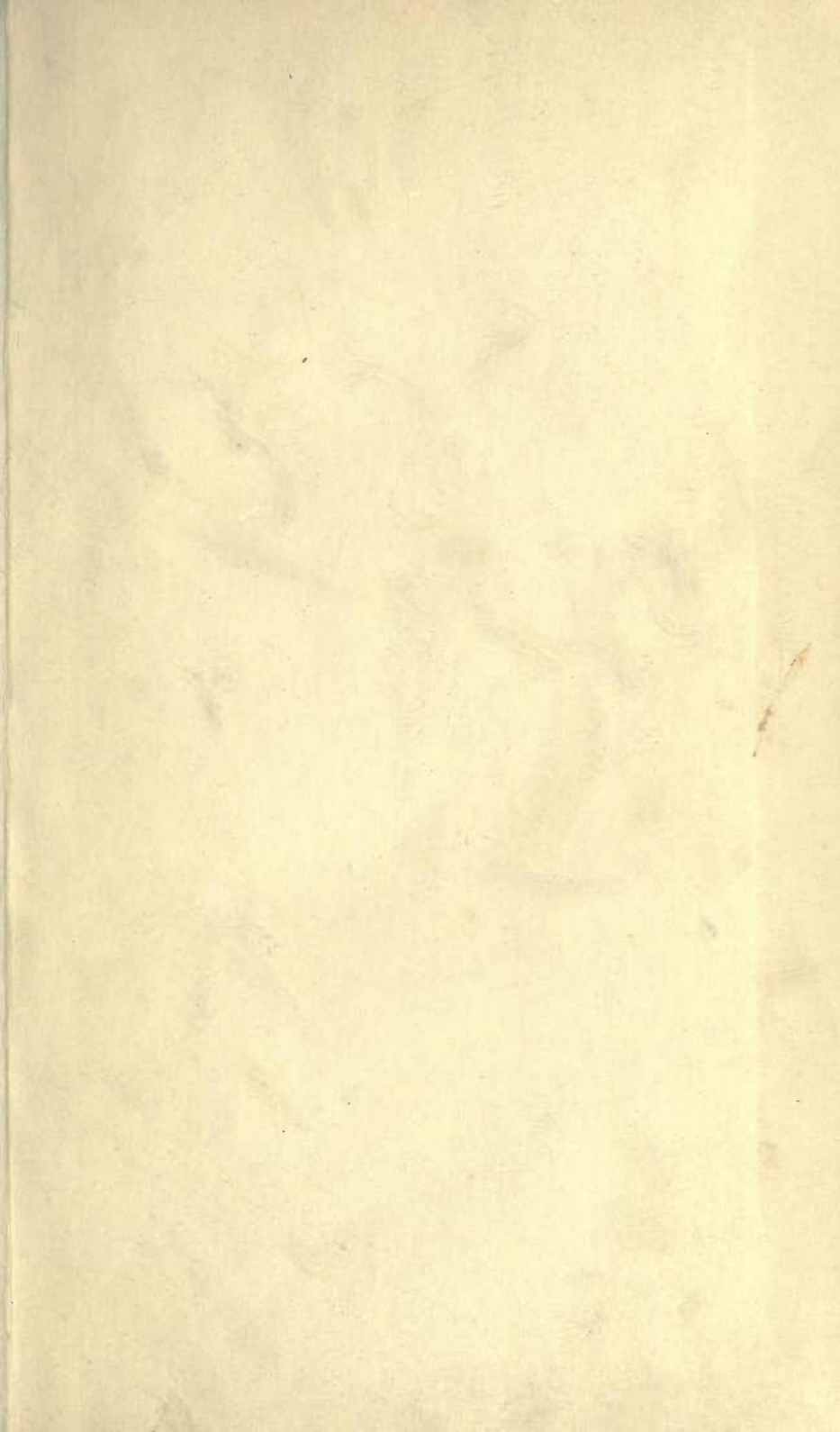


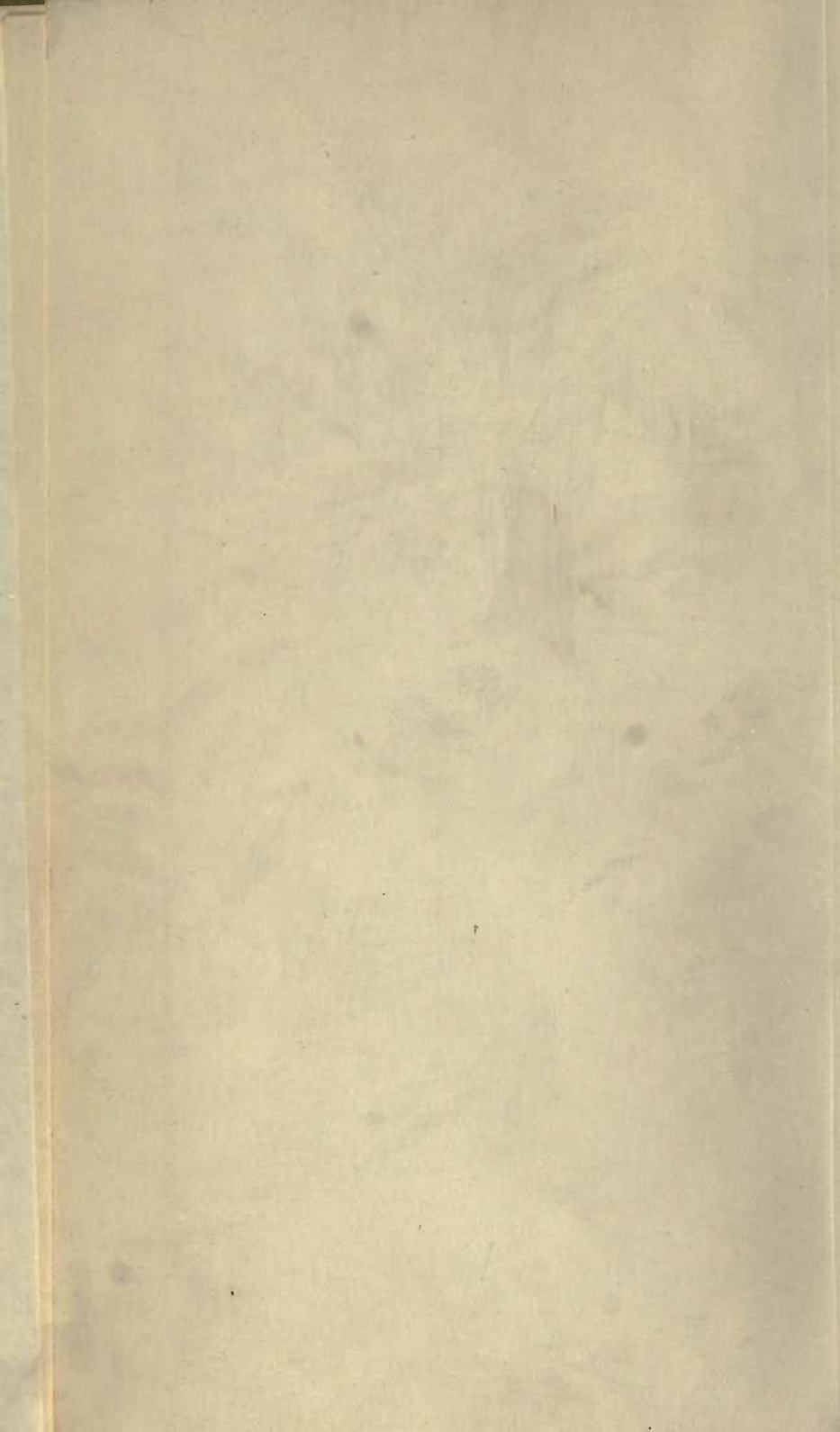
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OBSERVATIONS ON MAN,

HIS FRAME,

HIS DUTY, AND HIS EXPECTATIONS.

IN TWO PARTS.

BY

DAVID HARTLEY, M.D.

SIXTH EDITION,
CORRECTED AND REVISED.

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P R E F A C E.

THE Work here offered to the Public consists of papers written at different times, but taking their rise from the following occasion.

About eighteen years ago I was informed, that the Rev. Mr. Gay, then living, asserted the possibility of deducing all our intellectual pleasures and pains from association. This put me upon considering the power of association. Mr. Gay published his sentiments on this matter, about the same time, in a Dissertation on the fundamental Principle of Virtue, prefixed to Mr. Archdeacon Law's Translation of Archbishop King's Origin of Evil.

From inquiring into the power of association, I was led to examine both its consequences, in respect of morality and religion, and its physical cause. By degrees many disquisitions foreign to the doctrine

of association, or at least not immediately connected with it, intermixed themselves. I have here put together all my separate papers on these subjects, digesting them in such order as they seemed naturally to suggest; and adding such things as were necessary to make the whole appear more complete and systematical.

I think, however, that I cannot be called a system-maker, since I did not first form a system, and then suit the facts to it, but was carried on by a train of thoughts from one thing to another, frequently without any express design, or even any previous suspicion of the consequences that might arise. And this was most remarkably the case, in respect of the doctrine of *necessity*; for I was not at all aware, that it followed from that of association, for several years after I had begun my inquiries; nor did I admit it at last, without the greatest reluctance.

There are two things in these papers, which require a particular apology. First, The imperfect state in which they are presented to the reader. Secondly, The great freedom which I have used in respect to all orders of men in the conclusion of the Second Part.

As to the first; If the reader will be so favourable to me as to expect nothing more than hints and conjectures in difficult and obscure matters, and a short detail of the principal reasons and evidences in those that are clear, I hope he will not be much disappointed. However, be this as it will, I have in one part or other of these papers alleged all that I know material, in support of my system; and therefore am now desirous to recommend it to the consideration of others.

I have tried to reconcile such inconsistencies, real or apparent, and to cut off such repetitions and redundancies, as have arisen from my writing the separate parts of this work at different times, and in different situations of mind. But I have still need of great indulgence from the reader on these and other accounts.

As to the second thing; I can truly say, that my free and unreserved manner of speaking has flowed from the sincerity and earnestness of my heart. But I will not undertake to justify all that I have said. Some things may be too hasty and censorious; or, however, be unbecoming my place and station. I heartily wish, that I could have observed the true medium. For, want of candour

is not less an offence against the Gospel of Christ, than false shame, and want of courage in his cause.

Some persons may perhaps think, that I ought not to have delivered my opinions so freely and openly, concerning the necessity of human actions, and the ultimate happiness of all mankind; but have left the reader to deduce these consequences, or not, as should appear most reasonable to him. But this would, in my opinion, have been a disingenuous procedure. Besides, these tenets appear to me not only innocent, but even highly conducive to the promotion of piety and virtue amongst mankind. However, that no one may misapprehend me to his own hurt, I will here make two remarks by way of anticipation.

First, then, I no where deny practical free-will, or that voluntary power over our affections and actions, by which we deliberate, suspend, and choose, and which makes an essential part of our ideas of virtue and vice, reward and punishment; but, on the contrary, establish it (if so plain a thing will admit of being farther established) by shewing in what manner it results from the frame of our natures.

Secondly, I do most firmly believe, upon the authority of the Scriptures, that the future punishment of the wicked will be exceedingly great both in degree and duration, *i. e.* infinite and eternal, in that real practical sense to which alone our conceptions extend. And were I able to urge any thing upon a profane careless world, which might convince them of the infinite hazard to which they expose themselves, I would not fail to do it, as the reader may judge even from those passages for which I have above apologized.

December, 1748.

The object of the present investigation is to
 determine the effect of the various
 agents of the mind on the
 formation of the habit of
 attention and to determine
 in what manner the
 various agents of the
 mind are connected with
 the formation of the habit
 of attention.

The first part of the
 investigation is devoted
 to a consideration of the
 various agents of the
 mind and to a determination
 of their relative
 importance in the
 formation of the habit
 of attention.

The second part of the
 investigation is devoted
 to a consideration of the
 various agents of the
 mind and to a determination
 of their relative
 importance in the
 formation of the habit
 of attention.

The third part of the
 investigation is devoted
 to a consideration of the
 various agents of the
 mind and to a determination
 of their relative
 importance in the
 formation of the habit
 of attention.

CONTENTS.

THE FIRST PART.

INTRODUCTION.

	PAGE
DEFINITIONS	1
Distribution of the First Part	3

CHAP. I.

THE GENERAL LAWS, ACCORDING TO WHICH THE SENSATIONS AND MOTIONS ARE PERFORMED, AND OUR IDEAS GENERATED.

The doctrines of vibrations and association proposed	4
Their mutual connexion	<i>ib.</i>

SECT. I.

The Doctrine of Vibrations, and its Use for explaining the Sensations.

General evidences for the dependence of sensation and motion on the brain	5
General evidences for the dependence of ideas on the brain....	6
Instances shewing that sensations remain in the mind for a short time after the sensible objects are removed.	<i>ib.</i>
The infinitesimal medullary particles vibrate during sensation	8
The æther	<i>ib.</i>

	PAGE
The uniformity, continuity, softness, and active powers of the medullary substance	10
The manner in which vibrations are communicated to the whole medullary substance	13
Presumptions in favour of the doctrine of vibrations	16
Corollaries from this doctrine	20
Materiality of the soul no consequence of it.	21
Phenomena of sensible pleasure and pain agreeable to the doctrine of vibrations	22
Phenomena of sleep agreeable to the doctrines of vibrations ..	28

SECT. II. ✓

Ideas, their Generation and Associations, and the Agreement of the Doctrine of Vibrations with the Phenomena of Ideas.

The generation of the ideas of sensation	36
The repetition of sensory vibrations generates a disposition to corresponding vibratuncles or miniature vibrations.....	37
The power of raising ideas by association in the simplest case..	41
The power of raising miniature vibrations by association in the simplest case	43
The formation of complex ideas by association.....	46
The formation of complex miniature vibrations by association..	50
The complex vibrations last-mentioned may be so exalted, in some cases, as to be no longer miniatures, but equal in strength to sensory vibrations	51

SECT. III.

Muscular Motion, and its two Kinds, automatic and voluntary; and the Use of the Doctrines of Vibrations and Association, for explaining these respectively.

It is probable, that muscular motion is performed by the same general means as sensation, and the perception of ideas	54
Phænomena of muscular contraction agreeable to the doctrine of vibrations	56
Propensity of the muscles to alternate contraction and relaxation agreeable to the doctrine of vibrations	57
The origin of motory vibrations.....	58

	PAGE
The general method of explaining the automatic motions by the doctrine of vibrations	59
The generation and association of motory vibratiuncles	64
The general method of explaining the voluntary and semi-voluntary motions	65
The manner in which the endeavour to obtain pleasure, and remove pain, is generated	71

CHAP. II.

CONTAINING THE APPLICATION OF THE DOCTRINES OF VIBRATIONS
AND ASSOCIATION TO EACH OF THE SENSATIONS AND MOTIONS
IN PARTICULAR.

SECT. I.

The Sense of Feeling.

The several kinds of feeling, and the general causes of the different degrees of exquisiteness in this sense	73
An inquiry how far the sensations of heat and cold are agreeable to the doctrine of vibrations	75
An inquiry how far the phænomena of wounds, burns, bruises, lacerations, inflammations, and ulcers, are agreeable to the doctrine of vibrations	80
An inquiry how far the phænomena of itching and titillation are agreeable to the doctrine of vibrations	81
An inquiry how far the sensations attending pressure and muscular contraction are agreeable to the doctrine of vibrations . .	82
An inquiry how far the phænomena of numbness and paralytical insensibilities are agreeable to the doctrine of vibrations	83
An inquiry how far the phænomena of venomous bites and stings are agreeable to the doctrine of vibrations	85
An inquiry how far the tangible qualities of bodies admit of an explanation agreeable to the doctrine of vibrations	86
The manner in which we are enabled to judge of the seat of impressions made on the external surface of our bodies	88

	PAGE
The manner and degree in which we are enabled to judge of the seat of internal pains	89
The manner and degree in which the pleasures and pains of feeling contribute, according to the doctrine of association, to the formation of our intellectual pleasures and pains	91
The ideas generated by tangible impressions	92
The automatic motions which arise from tangible impressions	93
The manner and degree in which these automatic motions are influenced by voluntary and semi-voluntary powers	95

SECT. II.

The Sense of Taste.

The extent of the organ of taste, and the different powers lodged in the different parts of it	95
An inquiry how far the phænomena of tastes, and their specific differences, are agreeable to the doctrine of vibrations.....	96
An inquiry how far the several sensations which affect the stomach and bowels are agreeable to the doctrine of vibrations	99
An inquiry how far the phænomena of hunger are agreeable to the doctrine of vibrations	100
An inquiry how far the phænomena of thirst are agreeable to the doctrine of vibrations	102
An inquiry how far the changes, generally made in the taste, in passing from infancy to old age, are agreeable to the doctrines of vibrations and association.....	<i>ib.</i>
An inquiry how far the longings of pregnant women are agreeable to the doctrines of vibrations and association	104
The manner and degree in which the pleasures and pains of taste contribute, according to the doctrine of association, to the formation of our intellectual pleasures and pains	105
The ideas generated by the several tastes.....	106
The automatic motions which arise from the impressions made on the organ of taste.....	<i>ib.</i>
The manner and degree in which these automatic motions are influenced by voluntary and semi-voluntary powers	111

SECT. III.

The Sense of Smell.

	PAGE
The extent and powers of the organ of smell	113
An inquiry how far the general phænomena of smell are agreeable to the doctrine of vibrations	114
An inquiry how far the specific differences of odours are agreeable to the doctrine of vibrations	115
The manner and degree in which pleasant and unpleasant odours contribute, according to the doctrine of association, to the formation of our intellectual pleasures and pains	116
The ideas generated by the several odours	117
The automatic motions which arise from the impressions made on the organ of smell	<i>ib.</i>
The manner and degree in which these automatic motions are influenced by voluntary and semi-voluntary powers	119

SECT. IV.

The Sense of Sight.

The immediate organ of sight, and its powers	120
An inquiry how far the phænomena of colours are agreeable to the doctrine of vibrations	121
An inquiry how far flashes of light from strokes in the eye, dark spots, and giddiness, are agreeable to the doctrine of vibrations	124
An inquiry how far the judgments made by sight, concerning magnitude, distance, motion, figure, and position, are agreeable to the doctrine of association	126
An inquiry how far the phænomena of single and double vision are agreeable to the doctrine of association	129
The manner and degree in which agreeable and disagreeable impressions made on the eye contribute, according to the doctrine of association, to the formation of our intellectual pleasures and pains	130
The ideas generated by visible impressions	131
The automatic motions which are excited by impressions made on the eye	135
The manner and degree in which these automatic motions are influenced by voluntary and semi-voluntary powers	139

SECT. V.

The Sense of Hearing.

	PAGE
The immediate organ of hearing, and the general uses of the several parts of the external and internal ear	140
An inquiry how far the phænomena of musical and other inarticulate sounds are agreeable to the doctrine of vibrations . .	141
An inquiry how far the judgments, which we make concerning the distance and position of the sounding body, are agreeable to the doctrine of association	143
An inquiry how far the power of distinguishing articulate sounds depends upon association	144
The doctrine of sounds illustrates and favours that of the vibrations of the small medullary particles	145
The manner and degree in which agreeable and disagreeable sounds contribute, according to the doctrine of association, to the formation of our intellectual pleasures and pains	146
The ideas generated by audible impressions.	147
The automatic motions excited by impressions made on the ear	149
The manner and degree in which these automatic motions are influenced by voluntary and semi-voluntary powers	150

SECT. VI.

The Desire of the Sexes towards each other.

An inquiry how far the desires of the sexes towards each other are of a factitious nature, and agreeable to the theory of these papers.	150
---	-----

SECT. VII.

Other Motions, automatic and voluntary, not considered in the foregoing Sections of this Chapter.

An inquiry how far the motions of the heart, ordinary and extraordinary, are agreeable to the foregoing theory.	153
---	-----

An inquiry how far the action of respiration, with those of sighing, coughing, &c. are agreeable to the foregoing theory. . . . 156

An inquiry how far convulsive motions are agreeable to the foregoing theory. 160

An inquiry how far the actions of walking, handling, and speaking, are agreeable to the foregoing theory 161

SECT. VIII.

The Relation which the foregoing Theory bears to the Art of Physic.

The art of physic affords many proper tests of the doctrines of vibrations and association; and may receive considerable improvement from them, if they be true 166

CHAP. III.

CONTAINING A PARTICULAR APPLICATION OF THE FOREGOING THEORY TO THE PHENOMENA OF IDEAS, OR OF UNDERSTANDING, AFFECTION, MEMORY, AND IMAGINATION.

SECT. I.

Words, and the Ideas associated with them.

Words and phrases must excite ideas in us by association; and they excite ideas in us by no other means 169

The manner in which ideas are associated with words. 170

Consequences of this association of ideas with words 175

The nature of characters intended to represent objects and ideas immediately, and without the intervention of words 182

The use of the foregoing theory for explaining the nature of figurative words and phrases, and of analogy 183

The use of the foregoing theory for explaining the languages and method of writing of the first ages of the world 187

The general nature of a philosophical language; with short hints concerning the methods in which one might be constructed. . 199

An illustration and confirmation of the general doctrine of association, taken from the particular associations which take place in respect of language	201
Illustrations from musical sounds, colours, and tastes	202

SECT. II.

Propositions, and the Nature of Assent.

The nature of assent and dissent, and the causes from which they arise	204
Rules for the ascertainment of truth, and advancement of knowledge, drawn from the mathematical methods of considering quantity	210
A general application of the theory of this and the foregoing section to the several branches of science	222

SECT. III.

The Affections in general.

The origin and nature of the passions in general	231
--	-----

SECT. IV.

Memory.

An inquiry how far the phænomena of memory are agreeable to the foregoing theory	235
--	-----

SECT. V.

Imagination, Reveries, and Dreams. ✓

An inquiry how far the phænomena of imagination, reveries, and dreams, are agreeable to the foregoing theory	240
--	-----

SECT. VI.

Imperfections in the Rational Faculty.

	PAGE
An inquiry how far deviations from sound reason, and alienations of the mind, are agreeable to the foregoing theory	245

SECT. VII.

The Intellectual Faculties of Brutes.

An inquiry how far the inferiority of brutes to mankind, in intellectual capacities, is agreeable to the foregoing theory . .	253
---	-----

CHAP. IV.

THE SIX CLASSES OF INTELLECTUAL PLEASURES AND PAINS.

SECT. I.

The Pleasures and Pains of Imagination. ✓

An inquiry how far the pleasures and pains of imagination are agreeable to the foregoing theory	262
---	-----

SECT. II.

The Pleasures and Pains of Ambition.

An inquiry how far the pleasures and pains of ambition are agreeable to the foregoing theory	278
--	-----

SECT. III.

The Pleasures and Pains of Self-interest.

	PAGE
An inquiry how far the pleasures and pains of self-interest are agreeable to the foregoing theory	287

SECT. IV.

The Pleasures and Pains of Sympathy.

An inquiry how far the pleasures and pains of sympathy are agreeable to the foregoing theory	295
--	-----

SECT. V.

The Pleasures and Pains of Theopathy.

An inquiry how far the pleasures and pains of theopathy are agreeable to the foregoing theory	305
---	-----

SECT. VI.

The Pleasures and Pains of the Moral Sense.

An inquiry how far the pleasures and pains of the moral sense are agreeable to the foregoing theory	309
---	-----

CONCLUSION.

Containing some remarks on the mechanism of the human mind	313
--	-----

THE SECOND PART.

INTRODUCTION.

	PAGE
Distribution of the Second Part	323

CHAP. I.

THE BEING AND ATTRIBUTES OF GOD AND OF NATURAL RELIGION.

Something must have existed from all eternity	325
There must be an infinite and independent Being	<i>ib.</i>
The infinite and independent Being is endued with infinite power and knowledge	327
God is infinitely benevolent	330 X
Five notions of infinite benevolence considered and compared together	338 X
There is but one God	341
God is a spiritual Being	<i>ib.</i>
God is an eternal and omnipresent Being	343
God is an immutable Being	344
God is a free Being	<i>ib.</i>
Holiness, justice, veracity, mercy, and all other moral perfections, ought to be ascribed to God in an infinite degree	345 X
God is to be considered by us not only as our Creator, but also as our Governor, Judge, and Father	347
The foregoing evidences for the divine attributes afford a proper foundation for natural religion	350
Natural religion receives great light and confirmation from revealed	352
Religion pre-supposes free-will in the popular and practical sense, <i>i. e.</i> it pre-supposes a voluntary power over our affections and actions	355
Religion does not pre-suppose free-will in the philosophical sense, <i>i. e.</i> it does not pre-suppose a power of doing different things, the previous circumstances remaining the same	357
The infinite power and knowledge of God exclude free-will in the philosophical sense	363

CHAP. II.

THE TRUTH OF THE CHRISTIAN RELIGION.

	PAGE
The genuineness of the Scriptures proves the truth of the facts contained in them	367
The genuineness of the Scriptures proves their divine authority	370
The truth of the principal facts contained in the Scriptures proves their divine authority	371
Three different suppositions, which may be made concerning the divine inspiration of the Scriptures.	<i>ib.</i>
The manner in which the Scriptures have been handed down from age to age, proves both their genuineness and truth . .	374
The great importance of the Scriptures proves their genuineness and truth	375
The language, style, and manner of writing used in the Scriptures, prove their genuineness	382
The great number of particular circumstances of time, place, persons, &c. mentioned in the Scriptures, prove both their genuineness and truth	383
The agreement of the Scriptures with history, natural and civil, is a proof of their genuineness and truth	387
The agreement of the books of the Old and New Testaments with themselves and each other, is an argument both of their genuineness and truth	398
The unity of design, which appears in the dispensations recorded in the Scriptures, is an argument not only of their truth and genuineness, but also of their divine authority.	401
Divine communications, miracles, and prophecies, are agreeable to natural religion, and seem even necessary in the infancy of the world	407
The objections made against the miracles recorded in the Scriptures, from their being contrary to the course of nature, is of little or no force.	410
The historical evidences for the genuineness, truth, and divine authority of the Scriptures, do not grow less from age to age, but rather increase.	415
The prophecies delivered in the Scriptures prove their divine authority	416
The obscurity of the prophecies does not invalidate this proof	420

The double uses and applications of the types and prophecies are no objection to the evidences deducible from them, but rather a confirmation of these evidences	422
The application of the types and prophecies of the Old Testament, by the writers of the New, does not weaken the authority of these writers, but rather confirms it	423
The moral characters of Christ, the prophets, and apostles, prove the truth and divine authority of the Scriptures	426
The excellence of the doctrines contained in the Scriptures is an evidence of their divine authority.	429
The many advantages which have accrued to the world from the Patriarchal, Judaical, and Christian revelations, prove the divine authority of the Scriptures	431
The wonderful nature and superior excellence, of the attempt made by Christ and his apostles, are evidences of their divine authority.	433
The manner in which the love of God, and of our neighbour, is taught and inculcated in the Scriptures, is an evidence of their divine authority.	<i>ib.</i>
The doctrine of the necessary subserviency of pain to pleasure, unfolded in the Scriptures, is an evidence of their divine authority	434
The mutual instrumentality of beings to each other's happiness and misery, unfolded in the Scriptures, is an argument of their divine authority.	435
The divine authority of the Scriptures may be inferred from the superior wisdom of the Jewish laws, considered in a political light, and from the exquisite workmanship shewn in the tabernacle and temple	436
The want of universality in the publication of revealed religion, is no objection to it; but, on the contrary, the time and manner in which the Scriptures were written, and delivered to the world, are arguments for their divine authority	437
The exclusion of all great degrees of enthusiasm and imposture from the characters of Christ, the prophets and apostles, proves their divine authority.	439
The reception which Christ, his forerunners and followers, with their doctrines, have met with in all ages, is an argument of their divine authority.	440
The reception which false religions have met with in the world, are arguments of the truth of the Christian	441

CHAP. III.

THE RULE OF LIFE.

SECT. I.

The Rule of Life, as deducible from the Practice and Opinions of Mankind.

	PAGE
The practice of mankind affords some direction in respect of the rule of life.....	445
The opinions of mankind afford a better direction in respect of the rule of life, than their practice.....	446
The rule of life drawn from the practice and opinions of mankind is favourable to the cause of virtue	447
This rule corrects and improves itself perpetually	452

SECT. II.

The Regard due to the Pleasures and Pains of Sensation, in forming the Rule of Life.

The pleasures of sensation ought not to be made a primary pursuit	454
The pursuit of sensible pleasure ought to be regulated by the precepts of piety, benevolence, and the moral sense.....	457
Practical rules concerning diet	459
Practical rules concerning the commerce between the sexes ..	465
Practical rules concerning the hardships, pains, and uneasinesses, which occur in the daily intercourses of life	471

SECT. III. ✓

The Regard due to the Pleasures and Pains of Imagination in forming the Rule of Life.

The pleasures of imagination ought not to be made a primary pursuit	473
---	-----

	PAGE
The pursuit of the pleasures of imagination ought to be regulated by the precepts of benevolence, piety, and the moral sense	475
Practical rules concerning the elegancies and amusements of life	477
Practical rules concerning mirth, wit, and humour	479
Practical rules concerning the polite arts, and particularly of painting, music, and poetry	480
Practical rules concerning the pursuit of science	481
Practical rules concerning the ignorance, difficulties, and perplexities in which we find ourselves involved	482

SECT. IV.

The Regard due to the Pleasures of Honour, and the Pains of Shame, in forming the Rule of Life.

The pleasures of honour ought not to be made a primary pursuit	483
The pleasures of honour may be obtained in their greatest degree, and highest perfection, by paying a strict regard to the precepts of benevolence, piety, and the moral sense	485
Practical observations on the nature of humility, and the methods of attaining it	487

SECT. V.

The Regard due to the Pleasures and Pains of Self-interest in forming the Rule of Life.

The pleasures of self-interest ought not to be made a primary pursuit	491
A strict regard to the precepts of benevolence, piety, and the moral sense, favours even gross self-interest, and is the only method by which the refined and rational can be secured ..	496
Practical observations on self-interest and self-annihilation. . . .	497

SECT. VI.

The Regard due to the Pleasures and Pains of Sympathy, in forming the Rule of Life.

	PAGE
The pleasures of sympathy improve those of sensation, imagination, ambition, and self-interest; and unite with those of theopathy and the moral sense: they are self-consistent, and admit of an unlimited extent; and consequently they may be our primary pursuit	498
Practical rules for augmenting the benevolent affections, and suppressing the malevolent ones	503
Practical rules for the conduct of men towards each other in society	504
The duties arising from the principal relations of life	509

SECT. VII.

The Regard due to the Pleasures and Pains of Theopathy, in forming the Rule of Life.

The love of God regulates, improves, and perfects all the other parts of our nature, and affords a pleasure superior, in kind and degree, to all the rest; and therefore is our primary pursuit and ultimate end	514
Practical rules concerning the theopathic affections, faith, fear, gratitude, hope, trust, resignation, and love.....	518
Practical rules concerning the manner of expressing the theopathic affections by prayer, and other religious exercises ..	528

SECT. VIII.

The Regard due to the Pleasures and Pains of the Moral Sense, in forming the Rule of Life.

The moral sense ought to be made the immediate guide of our actions on all sudden emergencies.....	531
--	-----

	PAGE
Practical rules for the regulation and improvement of the moral sense	532
General corollaries to the seven last Sections	533

SECT. IX.

The Rule of Faith.

An inquiry how far faith in natural and revealed religion, also in the particular tenets of christian churches, is necessary for the purification and perfection of our natures..... 537

CHAP. IV.

THE EXPECTATIONS OF MANKIND, HERE AND HEREAFTER, IN CONSEQUENCE OF THEIR OBSERVANCE OR VIOLATION OF THE RULE OF LIFE.

SECT. I.

The Expectation of Individuals in the present Life.

It is probable, that most or all men receive more happiness than misery in their passage through the present life 545
 The balance cannot be much in favour even of the most happy, during the present life 546
 Virtue has always the fairest prospect even in this life, and vice is always exposed to the greatest hazards 547
 And yet it does not seem at all probable, that happiness is exactly proportioned to virtue in the present life..... 548

SECT. II.

The Expectation of Bodies Politic, the Jews in particular, and the World in general, during the present State of the Earth.

	PAGE
It is probable, that all the present civil governments will be overturned	549
It is probable, that the present forms of church government will be dissolved	551
It is probable, that the Jews will be restored to Palestine	553
The Christian religion will be preached to, and received by, all nations	555
It is not probable that there will be any pure or complete happiness before the destruction of this world by fire	557

SECT. III.

A future State after the Expiration of this Life.

It is probable, from the mere light of nature, that there will be a future state	558
The Christian revelation gives us an absolute assurance of a future state.	565
The rewards and punishments of a future life will far exceed the happiness and misery of this, both in degree and duration ..	566
It is probable, that the future happiness of the good will be of a spiritual nature ; but the future misery of the wicked may be both corporeal and mental	568
It seems probable, that the soul may remain in a state of inactivity, though perhaps not of insensibility, from death to the resurrection	571

SECT. IV.

The Terms of Salvation.

It follows from the foregoing theory of our intellectual pleasures and pains, as well as from other ways of considering them, that the bulk of mankind are not qualified for pure, unmixed happiness	572
--	-----

	PAGE
It follows from the declarations of the Scriptures, that the bulk of mankind are not qualified for the mansions of the blessed	573
A practical application of this doctrine to the real circumstances of mankind.....	574

SECT. V.

The final Happiness of all Mankind in some distant future State.

It is probable from reason, that all mankind will be made happy ultimately	581
It is probable from the Scriptures, that all mankind will be made happy ultimately	585
 CONCLUSION	 593

OBSERVATIONS ON MAN,

&c. &c.

PART I.

OBSERVATIONS ON THE FRAME OF THE HUMAN BODY AND MIND,
AND ON THEIR MUTUAL CONNEXIONS AND INFLUENCES.

INTRODUCTION.

MAN consists of two parts, body and mind.

The first is subjected to our senses and inquiries, in the same manner as the other parts of the external material world.

The last is that substance, agent, principle, &c. to which we refer the sensations, ideas, pleasures, pains, and voluntary motions.

Sensations are those internal feelings of the mind, which arise from the impressions made by external objects upon the several parts of our bodies.

All our other internal feelings may be called *ideas*. Some of these appear to spring up in the mind of themselves, some are suggested by words, others arise in other ways. Many writers comprehend *sensations* under *ideas*; but I every where use these words in the senses here ascribed to them.

The ideas which resemble sensations, are called *ideas of sensation*: all the rest may therefore be called *intellectual ideas*.

It will appear in the course of these observations, that the *ideas of sensation* are the elements of which all the rest are compounded. Hence *ideas of sensation* may be termed *simple, intellectual ones complex*.

The *pleasures* and *pains* are comprehended under the sensations and ideas, as these are explained above. For all our pleasures and pains are internal feelings, and conversely, all our internal feelings seem to be attended with some degree either of *pleasure* or *pain*. However, I shall, for the most part, give the names of *pleasure* and *pain* only to such degrees as are considerable;

referring all low evanescent ones to the head of *mere sensations and ideas*.

The pleasures and pains may be ranged under seven general classes; viz.

1. Sensation;
2. Imagination;
3. Ambition;
4. Self-Interest;
5. Sympathy;
6. Theopathy; and,
7. The Moral Sense; according as they arise from,
 1. The impressions made on the external senses;
 2. Natural or artificial beauty or deformity;
 3. The opinions of others concerning us;
 4. Our possession or want of the means of happiness, and security from, or subjection to, the hazards of misery;
 5. The pleasures and pains of our fellow-creatures;
 6. The affections excited in us by the contemplation of the Deity; or
 7. Moral beauty and deformity.

The human mind may also be considered as endued with the faculties of *memory, imagination, or fancy, understanding, affection, and will*.

Memory is that faculty by which traces of sensations and ideas recur, or are recalled, in the same order and proportion, accurately or nearly, as they were once actually presented.

When ideas, and trains of ideas, occur, or are called up in a vivid manner, and without regard to the order of former actual impressions and perceptions, this is said to be done by the power of *imagination or fancy*.

The *understanding* is that faculty by which we contemplate mere sensations and ideas, pursue truth, and assent to, or dissent from, propositions.

The *affections* have the pleasures and pains for their objects; as the *understanding* has the mere sensations and ideas. By the affections we are excited to pursue happiness, and all its means, and to fly from misery, and all its apparent causes.

The *will* is that state of mind which is immediately previous to, and causes, those express acts of memory, fancy, and bodily motion, which are termed *voluntary*.

The *motions* of the body are of two kinds, *automatic* and *voluntary*. The *automatic* motions are those which arise from the mechanism of the body in an evident manner. They are called *automatic*, from their resemblance to the motions of *automata*, or machines, whose principle of motion is within themselves. Of this kind are the motions of the heart, and peristaltic motion of the bowels. The *voluntary motions* are those which arise from ideas and affections, and which therefore are referred to the mind; the immediately preceding state of the mind, or of

the ideas and affections, being termed *will*, as noted in the last article. Such are the actions of walking, handling, speaking, &c. when attended to, and performed with an express design.

This may serve as a short account of the chief subjects considered in the first part of these observations. These subjects are so much involved in each other, that it is difficult, or even impossible, to begin any where upon clear ground, or so as to proceed entirely from the *data* to the *quæsitæ*, from things known to such as are unknown. I will endeavour it as much as I can, and for that purpose shall observe the following order.

First, I shall lay down the general laws, according to which the sensations and motions are performed, and our ideas generated.

Secondly, I shall consider each of the sensations and motions in particular, and inquire how far the phænomena of each illustrate, and are illustrated by, the foregoing general laws.

Thirdly, I shall proceed in like manner to the particular phænomena of ideas, or of understanding, affection, memory, and imagination; applying to them what has been before delivered.

Lastly, I shall endeavour to give a particular history and analysis of the six classes of intellectual pleasures and pains; viz. those of imagination, ambition, self-interest, sympathy, theopathy, and the moral sense.]

THE
DOCTRINES OF VIBRATIONS

AND
ASSOCIATION IN GENERAL.

CHAP. I.

THE GENERAL LAWS ACCORDING TO WHICH THE SENSATIONS AND
MOTIONS ARE PERFORMED, AND OUR IDEAS GENERATED.

MY chief design in the following chapter is briefly to explain, establish, and apply the doctrines of *vibrations* and *association*. The first of these doctrines is taken from the hints concerning the performance of sensation and motion, which Sir Isaac Newton has given at the end of his *Principia*, and in the Questions annexed to his *Optics*; the last, from what Mr. Locke, and other ingenious persons since his time, have delivered concerning the influence of *association* over our opinions and affections, and its use in explaining those things in an accurate and precise way, which are commonly referred to the power of habit and custom, in a general and indeterminate one.

The doctrine of *vibrations* may appear at first sight to have no connexion with that of *association*; however, if these doctrines be found in fact to contain the laws of the bodily and mental powers respectively, they must be related to each other, since the body and mind are. One may expect, that *vibrations* should infer *association* as their effect, and *association* point to *vibrations* as its cause. I will endeavour, in the present chapter, to trace out this mutual relation.

The proper method of philosophizing seems to be, to discover and establish the general laws of action, affecting the subject under consideration, from certain select, well-defined, and well-attested phænomena, and then to explain and predict the other

phænomena by these laws. This is the method of analysis and synthesis recommended and followed by Sir Isaac Newton.

I shall not be able to execute, with any accuracy, what the reader might expect of this kind, in respect of the doctrines of *vibrations* and *association*, and their general laws, on account of the great intricacy, extensiveness, and novelty of the subject. However, I will attempt a sketch in the best manner I can, for the service of future inquirers.

SECT. I.

THE DOCTRINE OF VIBRATIONS, AND ITS USE FOR EXPLAINING THE SENSATIONS.

PROP. I.—*The white medullary Substance of the Brain, spinal Marrow, and the Nerves proceeding from them, is the immediate Instrument of Sensation and Motion.*

UNDER the word *brain*, in these observations, I comprehend all that lies within the cavity of the skull, *i. e.* the *cerebrum*, or *brain* properly so called, the *cerebellum*, and the *medulla oblongata*.

This proposition seems to be sufficiently proved in the writings of physicians and anatomists; from the structure and functions of the several organs of the human body; from experiments on living animals; from the symptoms of diseases, and from dissections of morbid bodies. Sensibility, and the power of motion, seem to be conveyed to all the parts, in their natural state, from the brain and spinal marrow, along the nerves. These arise from the medullary, not the cortical part, every where, and are themselves of a white medullary substance. When the nerves of any part are cut, tied, or compressed in any considerable degree, the functions of that part are either entirely destroyed, or much impaired. When the spinal marrow is compressed by a dislocation of the *vertebræ* of the back, all the parts, whose nerves arise below the place of dislocation, become paralytic. When any considerable injury is done to the medullary substance of the brain, sensation, voluntary motion, memory, and intellect, are either entirely lost, or much impaired; and if the injury be very great, this extends immediately to the vital motions also, *viz.* to those of the heart, and organs of respiration, so as to occasion death. But this does not hold equally in respect of the cortical substance of the brain; perhaps not at all, unless as far as injuries done to it extend themselves to the medullary substance. In dissections after apoplexies, palsies, epilepsies, and other

distempers affecting the sensations and motions, it is usual to find some great disorder in the brain, from preternatural tumours, from blood, matter, or serum, lying upon the brain, or in its ventricles, &c. This may suffice as general evidence for the present. The particular reasons of some of these phænomena, with more definite evidences, will offer themselves in the course of these observations.

PROP. II.—*The white medullary Substance of the Brain is also the immediate Instrument, by which Ideas are presented to the Mind: or, in other words, whatever Changes are made in this Substance, corresponding Changes are made in our Ideas; and vice versâ.*

THE evidence for this proposition is also to be taken from the writings of physicians and anatomists; but especially from those parts of these writings which treat of the faculties of memory, attention, imagination, &c. and of mental disorders. It is sufficiently manifest from hence, that the perfection of our mental faculties depends upon the perfection of this substance; that all injuries done to it affect the trains of ideas proportionably; and that these cannot be restored to their natural course till such injuries be repaired. Poisons, spirituous liquors, opiates, fevers, blows upon the head, &c. all plainly affect the mind, by first disordering the medullary substance. And evacuations, rest, medicines, time, &c. as plainly restore the mind to its former state, by reversing the foregoing steps. But there will be more and more definite evidence offered in the course of these observations.

PROP. III.—*The Sensations remain in the Mind for a short time after the sensible Objects are removed.*

THIS is very evident in the sensations impressed on the eye. Thus, to use Sir Isaac Newton's words, "If a burning coal be nimbly moved round in a circle, with gyrations continually repeated, the whole circle will appear like fire; the reason of which is, that the sensation of the coal, in the several places of that circle, remains impressed on the *sensorium* until the coal return again to the same place. And so in a quick consecution of the colours," (*viz.* red, yellow, green, blue, and purple, mentioned in the experiment, whence this passage is taken,) "the impression of every colour remains on the *sensorium* until a revolution of all the colours be completed, and that first colour return again. The impressions therefore of all the successive colours are at once in the *sensorium*—and beget a sensation of white." *Opt.* b. I. p. 2. Experiment 10.

Thus also, when a person has had a candle, a window, or any other lucid and well-defined object, before his eyes for a con-

siderable time, he may perceive a very clear and precise image thereof to be left in the *sensorium*, fancy, or mind (for these I consider as equivalent expressions in our entrance upon these disquisitions,) for some time after he has closed his eyes. At least this will happen frequently to persons who are attentive to these things in a gentle way; for, as this appearance escapes the notice of those who are entirely inattentive, so too earnest a desire and attention prevents it, by introducing another state of mind or fancy.

To these may be referred the appearance mentioned by Sir Isaac Newton, *Opt. Qu. 16. viz.* "When a man in the dark presses either corner of his eye with his finger, and turns his eye away from his finger, he will see a circle of colours like those in the feather of a peacock's tail. And this appearance continues about a second of time after the eye and finger have remained quiet." The sensation continues therefore in the mind about a second of time after its cause ceases to act.

The same continuance of the sensations is also evident in the ear. For the sounds which we hear are reflected by the neighbouring bodies, and therefore consist of a variety of sounds, succeeding each other at different distances of time, according to the distances of the several reflecting bodies; which yet causes no confusion or apparent complexity of sound, unless the distance of the reflecting bodies be very considerable, as in spacious buildings. Much less are we able to distinguish the successive pulses of the air, even in the gravest sounds.

As to the senses of taste and smell, there seems to be no clear direct evidence for the continuance of their sensations after the proper objects are removed. But analogy would incline one to believe, that they must resemble the senses of sight and hearing in this particular, though the continuance cannot be perceived distinctly, on account of the shortness of it, or other circumstances. For the sensations must be supposed to bear such an analogy to each other, and so to depend in common upon the brain, that all evidences for the continuance of sensations in any one sense, will extend themselves to the rest. Thus all the senses may be considered as so many kinds of feeling; the taste is nearly allied to the feeling, the smell to the taste, and the sight and hearing to each other. All which analogies will offer themselves to view when we come to examine each of these senses in particular.

In the sense of feeling, the continuance of heat, after the heating body is removed, and that of the smart of a wound, after the instant of infliction, seem to be of the same kind with the appearances taken notice of in the eye and ear.

But the greatest part of the sensations of this sense resemble those of taste and smell, and vanish to appearance as soon as the objects are removed.

PROP. IV.—*External Objects impressed upon the Senses occasion, first in the Nerves on which they are impressed, and then in the Brain, Vibrations of the small, and as one may say, infinitesimal, medullary Particles.*

THESE vibrations are motions backwards and forwards of the small particles; of the same kind with the oscillations of pendulums, and the tremblings of the particles of sounding bodies. They must be conceived to be exceedingly short and small, so as not to have the least efficacy to disturb or move the whole bodies of the nerves or brain. For that the nerves themselves should vibrate like musical strings, is highly absurd; nor was it ever asserted by Sir Isaac Newton, or any of those who have embraced his notion of the performance of sensation and motion, by means of *vibrations*.

In like manner we are to suppose the particles which vibrate, to be of the inferior orders, and not those biggest particles, on which the operations in chemistry, and the colours of natural bodies, depend, according to the opinion of Sir Isaac Newton. Hence, in the *proposition*, I term the medullary particles, which vibrate, *infinitesimal*.

Now that external objects impress vibratory motions upon the medullary substance of the nerves and brain (which is the immediate instrument of sensation, according to the first proposition) appears from the continuance of the sensations mentioned in the third; since no motion, besides a vibratory one, can reside in any part for the least moment of time. External objects, being corporeal, can act upon the nerves and brain, which are also corporeal, by nothing but impressing motion on them. A vibrating motion may continue for a short time in the small medullary particles of the nerves and brain, without disturbing them, and after a short time would cease; and so would correspond to the above-mentioned short continuance of the sensations; and there seems to be no other species of motion that can correspond thereto.

COR. As this proposition is deduced from the foregoing, so if it could be established upon independent principles, (of which I shall treat under the next,) the foregoing might be deduced from it. And on this supposition there would be an argument for the continuance of the sensations, after the removal of their objects; which would extend to the senses of feeling, taste, and smell, in the same manner as to those of sight and hearing.

PROP. V.—*The Vibrations mentioned in the last Proposition are excited, propagated, and kept up, partly by the Æther, i. e. by a very subtle and elastic fluid, and partly by the Uniformity, Continuity, Softness, and active powers of the medullary Substance of the Brain, Spinal Marrow, and Nerves.*

THIS proposition is chiefly an evidence and explanation of the foregoing; and accordingly might have been included in it.

However, as it is of great importance in the present subject, I thought it best to give it a distinct place and consideration.

Before I enter upon the proof of it, it will be proper to premise something by way of explanation, concerning the æther, and the qualities of the medullary substance just mentioned.

Sir Isaac Newton supposes, that a very subtle and elastic fluid, which he calls *æther*, for the sake of treating upon it commodiously under an appropriated name, is diffused through the pores of gross bodies, as well as through the open spaces that are void of gross matter. He supposes likewise, that it is rarer in the pores of bodies than in open spaces, and even rarer in small pores and dense bodies, than in large pores and rare bodies; and also that its density increases in receding from gross matter; so, for instance, as to be greater at the hundredth of an inch from the surface of any body than at its surface; and so on. To the action of this æther he ascribes the attractions of gravitation and cohesion, the attractions and repulsions of electrical bodies, the mutual influences of bodies and light upon each other, the effects and communication of heat, and the performance of animal sensation and motion. My business in these observations is only with the last; but the reader will do well to consult what Sir Isaac Newton has himself advanced concerning the existence of this æther, and the properties and powers which he has ascribed to it in the last paragraph of his *Principia*, the Questions annexed to his *Optics*, and a Letter from him to Mr. Boyle, lately published in Mr. Boyle's Life. As to myself, I am not satisfied that I understand him perfectly on this subject. I will hint a few things partly from him, partly from my own reflections, concerning the existence and properties of this æther.

Since a thermometer kept *in vacuo* varies with the heat and cold of the room in which it is placed, as much as another surrounded by air; and since the small parts of hot bodies probably vibrate to and fro, and by thus vibrating keep up the heat for a certain time; one may conjecture that a subtle medium remains after the air is exhausted, and that heat is communicated to the thermometer suspended *in vacuo*, by the vibrating motions of this medium. See *Opt. Qu. 18*.

The greater density of the æther at a distance from bodies than at their surface, may be conjectured from the various phænomena solved by this supposition; which phænomena may also be alleged as probable evidences of the existence of the æther. See *Opt. Qu.* and the Letter to Mr. Boyle.

The great subtlety and elasticity of the æther may be inferred from the motions of the planets and quick propagation of light, if we first suppose its existence, and concurrence in the propagation of light, and efficacy in causing gravity. And from its great elasticity we may infer, that it is extremely susceptible of vibrations and pulses, in the same manner as common air. See *Opt. Qu.*

Since the gross bodies that lie upon the surface of the earth

emit air-particles, constituting a thin, elastic fluid, of great efficacy in performing the ordinary operations of nature, it seems not unnatural to expect, that the small particles of bodies should emit a proportionably attenuated air; *i. e.* an æther which may likewise have a great share in the subtle actions of the small particles of bodies over each other. The emission of odoriferous particles, light, magnetical and electrical effluvia, may also be some presumption in favour of the existence of the æther. Moreover, it is reasonable to expect that it should have a repulsive force in respect of the bodies which emit it; and for the same reasons its particles may repel each other. It may therefore be elastic, compressible, and apt to receive vibrations from the last cause; and from the first may be rarer within the pores of bodies than in large open spaces, and grow denser as the distance from gross matter increases. Our air is indeed denser near the earth than in the higher regions; but this is owing to its gravity prevailing against its expansive force. If we suppose the gravity of the æther to be very small, and its elasticity or expansive and repulsive force very great, both which must be supposed, if we admit it at all in the manner proposed by Sir Isaac Newton, its density may increase in receding from gross matter, and be much less in the pores of bodies than in open spaces void of gross matter. Thus we may suppose even the air, which remains in the large pores of such bodies as repel its particles, to be rarer than the common external air.

Lastly, let us suppose the existence of the æther, with these its properties, to be destitute of all direct evidence, still if it serve to explain and account for a great variety of phænomena, it will have an indirect evidence in its favour by these means. Thus we admit the key of a cypher to be a true one, when it explains the cypher completely; and the decypherer judges himself to approach to the true key, in proportion as he advances in the explanation of the cypher; and this without any direct evidence at all. And as the false and imperfect keys, which turn up to the decypherer in his researches, prepare the way for the discovery of the true and complete one, so any hypothesis that has so much plausibility as to explain a considerable number of facts, helps us to digest these facts in proper order, to bring new ones to light, and to make *experimenta crucis* for the sake of future inquirers. The rule of false affords an obvious and strong instance of the possibility of being led, with precision and certainty, to a true conclusion from a false position; and it is of the very essence of algebra to proceed in the way of supposition.

We come next to consider the uniformity and continuity of the white medullary substance of the brain, spinal marrow, and nerves. Now these are evident to the eye, as far as that can be a judge of them. The white medullary substance appears to be every where uniform and similar to itself throughout the whole brain, spinal marrow, and nerves; and though the cortical

substance be mixed with the medullary in the brain, and spinal marrow, and perhaps in the ganglions and plexuses, yet it does not appear that the communication of any one part of the medullary substance with every other, is cut off any where by the intervention of the cortical. There is no part of the medullary substance separated from the rest, but all make one continuous white body; so that if we suppose vibrations apt to run freely along this body from its uniformity, they must pervade the whole, in whatever part they are first excited, from its continuity.

The excessive minuteness of the vessels of which the medullary substance consists, may also be conceived as inferring its uniformity and continuity. These vessels are, by all anatomists and physiologists, supposed to arise from those of the cortical substance, this being agreeable to the analogy of the other parts of the body. And it follows from the same analogy, that they must be smaller than those vessels from which they arise. But the finer orders of the vessels of the cortical substance are far too minute to admit of the most subtle injections, the best injectors having never penetrated farther than the grosser orders of vessels in the cortical substance. We may therefore well suppose, that the medullary substance consists of a texture of vessels so small and regular, as that it may have no vacuity or interval in it, sufficient to interrupt or disturb the vibrations of the æther, and concomitant ones of the small medullary particles, propagated through this substance in the manner to be described below.

The softness of the medullary substance is, in like manner, evident to the senses, and the natural consequence of the extreme smallness of the compounding vessels, and fluids circulating through them.

If we admit the foregoing account of the uniform continuous texture of the medullary substance, it will follow that the nerves are rather solid capillaments, according to Sir Isaac Newton, than small *tubuli*, according to Boerhaave. And the same conclusion arises from admitting the doctrine of vibrations. The vibrations hereafter to be described, may more easily be conceived to be propagated along solid capillaments, so uniform in their texture as to be pellucid when singly taken, than along hollow *tubuli*. For the same reasons, the doctrine of vibrations will scarce permit us to suppose the brain to be a gland properly so called; since the deformity of texture required in a gland appears inconsistent with the free propagation of vibrations. Neither can we conclude the brain to be a gland, from the great quantity of blood sent to it by the heart. It is probable, indeed, that this is required on account of the important functions of accretion, nutrition, sensation, and motion, which are plainly performed by the brain. But then these functions admit of as easy an explanation on the hypothesis here proposed, as on that of a glandular secretion, called nervous fluid, animal spirits, &c.

In the mean time, I cannot but acknowledge many, or even most, things in the Boerhaavian doctrine concerning the structure and functions of the brain, to be beautiful, just, and useful. And it may even be that the doctrine of a glandular secretion, properly qualified, is not inconsistent with that of vibrations.

Sir Isaac Newton supposes the nerves, when singly taken, to be pellucid, because otherwise they could not be sufficiently uniform for the purpose of transmitting vibrations freely to and from the brain; the opacity of any body being, according to him, an argument that its pores are so large and irregular as to disturb and interrupt the vibrations of the æther. For the same reasons we must suppose the fibrils of the medullary substance of the brain to be pellucid, when singly taken. And this consideration may incline one to conjecture, that in palsies, the infinitesimal vessels of the fibrils of the brain, and capillaments of the nerves, are so obstructed, as to render these fibrils and capillaments white and opaque, in the same manner as the hair in old age, or the *cornea* in an *albugo*.

Since the *pia mater*, with its blood-vessels, enters the interstices of the several folds of the brain, one may suspect, that it penetrates not only the cortical substance, but also the medullary, along with the several descending orders of vessels, and consequently that it divides and subdivides the medullary substance into various greater and lesser regions. One may affirm, at least, that such a distribution of the *pia mater* would be greatly analogous to that of the cellular membrane, through the system of muscles, their separate portions, fibres, and fibrils. But then we may reasonably suppose the *pia mater* to be so attenuated in these its processes, as that the medullary substance may still remain sufficiently uniform for the free propagation of vibrations. Or, if there be some little impediment and confinement in certain regions, on account of some exceedingly small discontinuity, arising from this intervention of the *pia mater* between certain regions, it may, as it seems to me, suit this theory rather better than an absolute and perfect continuity, as before supposed. It is reasonable also to think, that the nerves of different parts have innumerable communications with each other in the brain, in the ganglions, (which are, as it were, little brains, according to the opinion of Winslow,) and even in the plexuses; and that many phænomena, particularly those of the sympathetic kind, are deducible from these communications. But as it seems impossible to trace out these communications anatomically, on account of the great softness of the brain, we must content ourselves with such conjectures as the phænomena shall suggest, trying them by one another, and admitting for the present those which appear most consistent upon the whole, till farther light appears. The same, or even a greater, obscurity attends all inquiries into the uses of the particular shape and protuberances of the medullary substance of the brain.

We come, in the last place, to consider what active properties may belong to the small particles of the medullary substance, *i. e.* to the small particles which compose either the ultimate vessels of this substance, or the fluid which circulates in these ultimate vessels. The common doctrine concerning the powers of the nervous system supposes the fluid secreted by, and circulating through, the medullary substance to be of a very active nature; and this may be, though the taste of the medullary substance in brute animals discovers no such activity. For the power of impressing tastes seems to reside in particles much larger than those which we are here considering. And it is sufficiently obvious, that many poisons, mineral, vegetable, and animal, have the most active properties concealed under insipid or at least moderate savours. Now that some powers of attraction or repulsion, or rather of both at different distances, reside in the small particles of the medullary substance, can scarce be doubted, after so many instances and evidences, as Sir Isaac Newton has produced, of attractive and repulsive powers in the small particles of various bodies, *Opt. Qu.* 31; meaning, as he does, by attraction and repulsion, a mere mathematical tendency to approach and recede, be the cause what it will, impulse, pressure, an unknown one, or no physical cause at all, but the immediate agency of the Deity. The smallness also of the particles of the medullary substance may not improbably increase their activity, in respect of their bulk, agreeably to Sir Isaac Newton's conjecture concerning the particles of the æther. Which may be farther inferred from the nature of these attractions and repulsions; for since they seem to be as some reciprocal power of the distance, we may judge that only the nearest parts of large particles will be eminently active, and that the more remote ones will be an impediment to their actions; whence small particles, having nearly as great active powers, and much less matter to be moved, will, upon the whole, be more active in proportion to their bulk, than large ones. If we farther suppose the particles of the fluids, which circulate through the ultimate vessels of the medullary substance, to be smaller than the particles which compose these vessels, then will they also be more active. And thus we seem to approach to all that is probable in the received doctrines concerning the nervous fluid, and the animal spirits, supposed to be either the same or different things; and all the arguments which Boerhaave has brought for his hypothesis, of a glandular secretion of a very subtle active fluid in the brain, may be accommodated to the Newtonian hypothesis of vibrations.

Having thus endeavoured to settle our notions concerning the æther, and establish our evidences for its existence and properties, and for the uniformity, continuity, softness, and active powers of the medullary substance; we come, in the next place, to inquire in what manner these may serve to explain or evince

the vibrations of the medullary particles, asserted in the foregoing proposition.

First, then, We are to conceive, that when external objects are impressed on the sensory nerves, they excite vibrations in the æther residing in the pores of these nerves, by means of the mutual actions interceding between the objects, nerves, and æther. For there seem to be mutual actions of all the varieties between these three, in all the senses, though of a different nature in different senses. Thus it seems that light affects both the optic nerve and the æther; and also, that the affections of the æther are communicated to the optic nerve, and *vice versâ*. And the same may be observed of frictions of the skin, tastes, smells, and sounds. The impulse, attraction, or whatever else be the action of the object, affects both the nerves and the æther; these affect each other, and even the object or impression itself, in most or all cases, so as to alter or modify it. And the result of these actions, upon the whole, may be supposed such a compression or increase of density in the æther, as must agitate its particles with vibrations analogous to those which are excited in the air by the discharge of guns, by thunder-claps, or by any other method of causing a sudden and violent compression in it.

Secondly, We are to conceive, that the vibrations thus excited in the æther will agitate the small particles of the medullary substance of the sensory nerves with synchronous vibrations, in the same manner as the vibrations of the air in sounds agitate many regular bodies with corresponding vibrations or tremblings. And here the uniformity, softness, and active powers of the medullary substance, must be considered as previous requisites and assistances. A want of uniformity in the medullary substance would argue a like want of uniformity in the æther contained within it. The hardness of it, if it extended to the particles, would cause an ineptitude to vibratory motions in the particles of these particles, *i. e.* in the infinitesimal particles considered in this and the foregoing proposition. And a want of active powers in these particles would suffer the excited motions to die away prematurely.

One may conjecture, indeed, that the rays of light excite vibrations in the small particles of the optic nerve, by a direct and immediate action. For it seems probable, from the alternate fits of easy transmission and reflexion, that the rays of light are themselves agitated by very subtle vibrations, and consequently that they must communicate these directly and immediately to the particles of the optic nerves. And it may be also, that sapid and odoriferous particles are agitated with specific vibrations, and that they communicate these directly and immediately to the small particles of the gustatory and olfactory nerves respectively, as well as to the interjacent æther. Upon this supposition, the vibrations of the æther must be conceived as regulating

and supporting the vibrations of the particles, not as exciting them originally.

Thirdly, The vibrations thus excited in the æther, and particles of the sensory nerves, will be propagated along the course of these nerves up to the brain. For the æther residing in the medullary substance, being of an uniform density on account of the smallness of the pores of the medullary substance, and uniformity of its texture, before taken notice of, will suffer the excited vibrations to run freely through it. And the same uniformity, together with the continuity, softness, and active powers of the medullary substance, will farther contribute to the free propagation of the vibrations; since, on these accounts, it follows, that the particles, which were last agitated, may easily communicate their agitations or vibrations to the similarly posited and equal contiguous ones, without interruption, and almost without any diminution of force. This free propagation of vibrations along the course of the nerves may be illustrated and confirmed by the like free propagation of sounds along the surface of water, which has sometimes been observed in still, calm nights.

Fourthly, The vibrations here described are confined to the medullary substance, or at least are only propagated feebly and imperfectly into the neighbouring parts, on account of the heterogeneity and greater hardness of the neighbouring parts. The first will make the æther of different densities, and in some cases there may be almost an interruption or discontinuity of it; and the last will indispose the particles to receive and communicate vibrations; and we may suppose from both together, agreeably to what has been already remarked, that only small vibrations, and such irregular ones as oppose each other, will just begin to take place in the immediately contiguous parts, and there cease without proceeding farther. It is somewhat analogous to this in sounds, that they are much sooner lost in passing over rough surfaces than smooth ones; and particularly, that they receive a much greater diminution from the irregular surface of the earth, than from that of still water. However, a particular exception is here to be made in respect of the fibres of the muscles and membranes, into which the vibrations of the æther and medullary particles seem to be propagated with great freedom and strength, as will be seen hereafter. Which may perhaps be some argument that muscular fibres are, according to Boerhaave's opinion, mere productions of the ultimate nerves.

Fifthly, As soon as the vibrations enter the brain, they begin to be propagated freely every way over the whole medullary substance; being diminished in strength, in proportion to the quantity of matter agitated, just as in sounds, *i. e.* as it were in a reciprocal duplicate ratio of the distance from the place where the sensory nerve affected by the vibrations enters the brain. Or, if we suppose the *pia mater* to make some small discontinuity

in the medullary substance by its processes, as has been hinted above, then we must also suppose that the vibrations, which ascend along any sensory nerve, affect the region of the brain which corresponds to this sensory nerve more, and the other regions less, than according to this proportion.

Sixthly, Since the vibrations, or reciprocal motions, of the small particles of each nerve are made in the same line of direction with the nerve, they must enter the brain in that direction, and may preserve some small regard to this direction at considerable distances within the brain; especially if this be favoured by the structure of the nervous fibrils in the brain. Hence the same internal parts of the brain may be made to vibrate in different directions, according to the different directions of the nerves by which the vibrations enter.

And thus it appears, that, admitting the existence and subtlety of the æther, and the qualities of the medullary substance here alleged, a probable account may be given, how the vibrations, asserted in the last proposition, may be excited in the sensory nerves, and propagated thence over the whole medullary substance, and over that alone. And the suitability of this proposition to the last, and of both to a variety of phænomena, which will be seen in the course of these observations, may be considered as some evidence for both.

Let it be remarked also, that, if the performance of sensation by vibratory motions of the medullary particles be admitted, the existence of a subtle elastic fluid must be admitted in consequence thereof, as the only means that can be conceived for their rise and free propagation, so as to answer to the phænomena of sense, motion, and ideas; and reciprocally, if the existence of so subtle and elastic a fluid, as the æther described by Sir Isaac Newton, can be established upon independent principles, it may reasonably be supposed to penetrate the pores of the medullary substance, how small soever they be, in the same manner as air penetrates grosser cavities and pores; and, like air, both be itself agitated by vibrations from a variety of causes, and also communicate these to the medullary particles. We may, therefore, either deduce the doctrine of vibrations here proposed from the consideration of the æther, or the existence of the æther from the doctrine of vibrations, according as either of these can be first established.

There is also some light and evidence to be cast upon one or both of these propositions, from several natural phænomena; as I will endeavour to shew in the following remarks:—

1. Heat in natural bodies is probably attended by vibrations of the small parts. This may be inferred from the duration and gradual declension of heat, and from the gross general proportion which is observed between this duration and the density of the heated body. For a vibratory motion would subsist for some time, decline gradually, and be kept up longer, *cæteris paribus*,

where the number of vibrating particles were many, than where few. The same hypothesis is well suited to the rarefaction, fluidity, dissolution, and other changes of texture which heat produces in bodies, according to their various natures. And if we farther consider that all bodies, contiguous to each other, come, after a short time, to the same degree of heat, *viz.* that of the circumambient air; those which are hotter losing something, and those which are colder gaining; and yet that the air is not necessary for the conveyance of heat, as appears from Sir Isaac Newton's experiment of the two thermometers above-mentioned; it will appear highly probable, both that heat in bodies is attended by vibratory motions of the small parts, and also that these are communicated to contiguous bodies by vibrations of a subtle fluid, by an argument something different from that urged above, in speaking of the two thermometers; at least the consideration of the equality of temperature, to which all contiguous bodies are known, by common observations, to arrive, will cast some light upon that argument. And upon the whole it will follow, that heat in us is caused or attended by subtle vibrations of the medullary substance, which is the immediate instrument of all the sensations; and that a subtle fluid is concerned in the production of this effect. And what is thus proved of heat, may be inferred to hold in respect of all the other sensations, from the argument of analogy.

2. Light is so nearly related to heat, that we must suppose the argument of analogy to be particularly strong in respect of it: but besides this, we have an independent argument for the existence of vibrations here, also for their communication by a subtle fluid, if we admit Sir Isaac Newton's hypothesis concerning the cause of the alternate fits of easy reflection and transmission, as I have above remarked.

3. As sounds are caused by pulses or vibrations excited in the air by the tremors of the parts of sounding bodies, they must raise vibrations in the *membrana tympani*; and the small bones of the ear seem peculiarly adapted, by their situation and muscles, to communicate these vibrations to the cavities of the *vestibulum*, semicircular canals, and *cochlea*, in which the auditory nerve is expanded; *i. e.* to the nerve itself. Now though these are gross vibrations, in respect of those which we must suppose to take place in the æther itself, yet they prepare the way for the supposition of the more subtle vibrations of the æther, and may be the instrument of these, in the same manner as very gross reciprocal motions of bodies in the air are observed to produce, by percussion, those quicker vibrations in which sound consists.

4. We are, in some measure, prepared also for admitting the doctrine of vibrations in the animal functions, from that disposition to yield a sound upon percussion, which appears in some degree in almost all bodies; since this shews, that the disposition

to vibrate is general, or even universal, in the bigger orders of particles; and therefore makes it more easy to conceive, that there may be a like disposition in the lesser orders, *i. e.* in the infinitesimal medullary particles, considered in this and the foregoing proposition.

5. The mutual attractions and repulsions which seem to intercede between all small particles, concur to the same purpose. For when the attractions and repulsions are changed, by changing the distances of the particles, these must oscillate to and fro for some time, before they can gain their former equilibrium.

6. Elasticity seems to result from mutual attractions and repulsions of some kind, and is evidently the cause of vibrations in musical strings, and many other bodies. It seems also, that there is scarce any body entirely devoid of elasticity. And thus elasticity is connected with the doctrine of vibrations in different ways.

7. The effluvia of electric bodies seem to have vibrating motions. For they are excited by friction, patting, and heat; and excite light, sound, and a pricking sensation. They have also a repulsive power in respect of each other, as the particles of air have; and therefore must, like them, be easily susceptible of vibrations. Their motions along hempen strings resemble the motions along the nerves in sensation and muscular contraction; and their attractive powers, at the end of such strings, resemble the powers of the sensations over the muscles for contracting them. So that electricity is also connected in various ways with the doctrine of vibrations.

Lastly, To sum up in one what has been remarked in the last five paragraphs: as the attractions of gravitation, electricity, magnetism, and cohesion, with the repulsions which attend upon the three last, intimate to us the general tenor of nature in this respect; *viz.* that many of its phænomena are carried on by attractions and repulsions; and that these may be expected to take place in the small descending orders of particles, as well as in gross bodies, and in the biggest component particles; so the pulses of the air, the tremors of sounding bodies, the propagation of sounds both through the air, and along contiguous solid bodies, the oscillations of elastic bodies, and the phænomena of electricity, may, in like manner, serve as a clew and guide to the invention, and afford a presumption, that other reciprocal motions or vibrations have a great share in the production of natural phænomena.

Nor is it an objection to this, but rather a confirmation of it, that these principles of attraction and repulsion of the several kinds, and of vibrations, are dependent upon and involved within each other, since this also is agreeable to the tenor of nature, as it is observed in the body, in the mind, in science in general, and in the several branches of each science in particular. Each part, faculty, principle, &c. when considered and pursued

sufficiently, seems to extend itself into the boundaries of the others, and, as it were, to enclose and comprehend them all. Thus magnetism mixes itself with the gravitation both of bodies upon the surface of the earth, and with that of the moon to the earth: a polar virtue of the same kind seems to have a principal share in the formation of natural bodies, especially those whose parts cohere in regular figures: electricity may also extend, without being excited by friction or otherwise, to small distances, and join with the just-mentioned polar virtue in making the parts of bodies cohere, and in some cases in regular figures. The effervescence which attends the mixture of acids and alcalis, and the solution of certain bodies in menstruums, fermentation, and putrefaction, are all general principles of very extensive influence, nearly related to each other, and to the fore-mentioned mutual attractions and repulsions, and are possessed of the same unlimited power of propagating themselves, which belongs to the several species of plants and animals. A repulsion which should throw off indefinitely small corpuscles with indefinitely great velocity from all the bodies of the universe, (a thing that would be very analogous to the emission of light, odoriferous particles, and magnetical and electrical effluvia, and to the generation of air and vapour,) might cause the gravitation of all the great bodies of the universe to each other, and perhaps other kinds of attraction. Some of these corpuscles, by stopping each other in the intermundane spaces, or other mutually repulsive corpuscles lodged there from causes not yet discovered, may compose a subtle vibrating medium. The vibrations of this medium, being continued to the great bodies of the universe, may so far agitate their small parts, as to give their attractive and repulsive powers an opportunity to exert themselves with great vigour; and the emission of the above-mentioned corpuscles may be, in part, occasioned by the attractions and consequent collisions of small parts thus agitated; so that elastic corpuscles may be thrown off from these small parts with indefinitely great velocity. And it would be no objection to these or such like suppositions, that we could not explain, in any definite manner, how these things are affected, nor put any limits to the sizes of decreasing corpuscles, or their active powers in respect of each other. Nor would this be to reason in a circle, more than when we argue, that the heart and brain, or the body and the mind, depend upon each other for their functions; which are undeniable truths, however unable we may be to give a full and ultimate explanation of them. However it is not impossible, on the other hand, but future ages may analyse all the actions of bodies upon each other, up to a few simple principles, by making such suppositions as the phænomena shall suggest, and then trying and modelling them by the phænomena. At least this is what one is led to hope, from the many simple and easy solutions of very complex problems, which have been produced within the two last centuries.

We may draw the following corollaries from the hypothesis of vibrations, as laid down in the two foregoing propositions.

COR. I. The vibrations of the medullary particles may be affected with four sorts of differences; *viz.* those of degree, kind, place, and line of direction. Vibrations differ in degree, according as they are more or less vigorous; *i. e.* as the particles oscillate to and fro, through a longer or shorter very short space; *i. e.* as the impression of the object is stronger or weaker, and thus affects the medullary particles more or less vigorously, either directly and immediately, or mediately, by generating a greater or less degree of condensation in the pulses of the æther. Vibrations differ in kind, according as they are more or less frequent; *i. e.* more or less numerous, in the same space of time. They differ in place according as they affect this or that region of the medullary substance of the brain primarily. And they differ in the line of direction, according as they enter by different external nerves.

COR. II. The magnitude of each sensation is chiefly to be estimated from the vibrations which take place in the medullary substance of the brain; those which are excited in the spinal marrow and nerves being, for the most part, so inconsiderable, in respect of the just-mentioned ones, that they may be neglected.

COR. III. The brain may therefore, in a common way of speaking, be reckoned the seat of the sensitive soul, or the sensorium, in men, and all those animals where the medullary substance of the nerves and spinal marrow is much less than that of the brain; and this even upon the supposition laid down in the first proposition; *viz.* that the whole medullary substance of the brain, spinal marrow, and nerves, is the immediate instrument of sensation, and equally related to the sensitive soul, or principle. But if there be any reason to suppose that the first proposition is not strictly true, but that the spinal marrow and nerves are only instruments subservient to the brain, just as the organs of the hand, eye, ear, &c. are to them, and the brain itself to the soul, we may conclude absolutely, that the sensorium of such animals is to be placed in the brain, or even in the innermost regions of it. Now there are some phænomena which favour this, by shewing, that whatever motions be excited in the nerves, no sensation can arise unless this motion penetrate to, and prevail in, the brain. Thus, when a nerve is compressed, we lose the sense of feeling in the parts to which it leads: a person much intent upon his own thoughts does not hear the sound of a clock; *i. e.* the vibrations excited by this sound in the auditory nerve cannot penetrate to, and prevail in, the brain, on account of those which already occupy it: and a person who has lost a limb often feels a pain which seems to proceed from the amputated limb; probably because the region of the brain corresponding to that limb is still affected.

If it be certain, that some of the medullary parts have been

discharged in abscesses of the brain, one would incline to think, that the external parts of the medulla are instrumental, in respect of the internal. And, on the other hand, one may question, whether in animals of the serpentine form, and those whose brains are comparatively small, and in all those of the polypous kind, the sensorium be not equally diffused over the whole medullary substance, or even over all the living parts. I only hint these things, not presuming even to conjecture, but only to excite those who have proper opportunities, to inquire carefully into these matters.

COR. IV. If we allow the existence of the æther, and its use in performing sensation, thought, and motion, as it may be inferred from the two foregoing propositions, compared with such other things as follow in these observations, in favour of the doctrine of vibrations; we may conclude that the æther must have a considerable share in the production of many other natural phænomena; and therefore shall have a sufficient foundation for trying how far it will carry us agreeably to the facts. I would recommend this, in a particular manner, to those persons who are much conversant with electrical phænomena; especially as Sir Isaac Newton himself, whose great caution and reservedness, in difficult and doubtful matters, are sufficiently known, has made no scruple to affirm, that the powers of electrical bodies are owing to the action of the æther. See the last paragraph of the Principia.

SCHOLIUM. It may be proper to remark here, that I do not, by thus ascribing the performance of sensation to vibrations excited in the medullary substance, in the least presume to assert, or intimate, that matter can be endued with the power of sensation. It is common to all systems, to suppose some motions attendant upon sensation, since corporeal objects must, by their actions, impress some motion upon our bodies, and particularly upon that part which is most nearly related to the sentient principle; *i. e.* upon the medullary substance, according to the first and second propositions. I lay down these propositions, therefore, as established by the common consent of physicians and philosophers; and upon that foundation proceed to inquire into, and determine, some matters of a more difficult nature; such as, the complex problems concerning sensations, ideas, and motions, and their mutual influences and relations.

The following instance may illustrate this:—The quantity of matter in bodies is always found to be proportional to their gravity: we may therefore either make the quantity of matter the exponent of the gravity, or the gravity the exponent of it, according as either can be best ascertained; notwithstanding that we are entirely at a loss to determine in what mechanical way each atom contributes to the gravity of the whole mass; and even though we should, with some, suppose this effect to be immechanical, and to arise from the immediate agency of God.

And by parity of reason, if that species of motion which we term vibrations, can be shown, by probable arguments, to attend upon all sensations, ideas, and motions, and to be proportional to them; then we are at liberty either to make vibrations the exponent of sensations, ideas, and motions, or these the exponents of vibrations, as best suits the inquiry; however impossible it may be to discover in what way vibrations cause, or are connected with, sensations, or ideas; *i. e.* though vibrations be of a corporeal, sensations and ideas of a mental, nature.

If we suppose an infinitesimal elementary body to be intermediate between the soul and gross body, which appears to be no improbable supposition, then the changes in our sensations, ideas, and motions, may correspond to the changes made in the medullary substance, only as far as these correspond to the changes made in the elementary body. And if these last changes have some other source besides the vibrations in the medullary substance, some peculiar original properties, for instance, of the elementary body, then vibrations will not be adequate exponents of sensations, ideas, and motions. Other suppositions to the same purpose might be made; and upon the whole, I conjecture, that though the first and second propositions are true, in a very useful practical sense, yet they are not so in an ultimate and precise one.

PROP. VI.—*The Phænomena of sensible Pleasure and Pain appear to be very suitable to the Doctrine of Vibrations.*

THE most vigorous of our sensations are termed sensible pleasures and pains, as noted above, in the Introduction. And the vivid nature of these engages us to be very attentive to their several properties, relations, and oppositions. It is requisite therefore, in our inquiry into the doctrine of vibrations, to examine, how far the phænomena of sensible pleasure and pain can be deduced from, or explained by, it.

First, then, the doctrine of vibrations seems to require, that each pain should differ from the corresponding and opposite pleasure, not in kind, but in degree only; *i. e.* that pain should be nothing more than pleasure itself, carried beyond a due limit. For of the four differences of vibrations mentioned in the first corollary of the foregoing proposition, three are given, *viz.* those of kind, place, and line of direction, in the pleasures and pains which correspond, as opposites to each other: there is therefore nothing left, from whence the difference of such pleasures and pains can arise, except the difference of degree. But the phænomena appear to be sufficiently suitable to this reasoning, inasmuch as all pleasure appears to pass into pain, by increasing its cause, impression, duration, sensibility of the organ upon which it is impressed, &c. Thus an agreeable warmth may be made to pass into a troublesome or burning heat, by

increase, or continuance; and the same thing holds in respect of friction, light, and sounds. And as medicinal bodies appear, from observations both philosophical and vulgar, to be endued with more active properties than common aliments; *i. e.* to be fitted for exciting stronger vibrations; so their tastes and smells are, for the most part, ungrateful; whereas those of common aliments are pleasant. It may be observed also, that some painful sensations, as they decrease by time, or the removal of the cause, pass into positive local pleasures, of the same species as the preceding pain; thus shewing the near alliance between pleasure and pain; and that a mere difference in degree puts on the appearance of one in kind, at a certain point. I suppose it may be referred to this head, that some bitter and acrimonious tastes leave an agreeable relish of the sweet kind upon the tongue after some time.

Secondly, It agrees well with the doctrine of vibrations, that all evident solutions of continuity in the living parts occasion pain, inasmuch as a solution of continuity cannot happen without a violent impression of some sensible object, nor, by consequence, without violent mutual actions between the object, nerves, and æther. The solution of continuity does therefore pre-suppose that degree of violence in the vibrations, which exceeds the limit of pleasure, and is proper to pain, according to the foregoing paragraph.

Thirdly, We may, in like manner, give a reason, from the doctrine of vibrations, both why a moderate degree of distention in the parts is necessary to their growth and pleasurable state; and also, why all great distentions are attended with pain for a considerable time before they are raised to such a pitch as to cause a visible solution of continuity. For a great distention is equivalent to a vigorous impression of a sensible object, being often caused by such; and as the situation of the small particles is changed in great distentions, their mutual actions will be changed also, and so may give rise to more vigorous vibrations; and these increased vibrations may either fall within the limits of pleasure, or go beyond them, according to their degree. We are also to consider, that in all considerable distentions there is an increase of friction between the vessels and circulating fluids, and consequently of heat, *i. e.* of vibrations.

But besides this, it seems not improbable, that in preternatural and painful distentions, the small particles are perpetually separating themselves from their former cohesions, and running into new ones; so that a minute and invisible solution of continuity is carried on during the whole distention, till such time as this degree of distention becomes familiar to the parts, and the situation and mutual actions of the small particles be accommodated to it. Thus, the cause of the pain in distentions will arise from the solution of continuity, and may be referred to the foregoing head. And conversely it appears, that in manifest

solutions of continuity, occasioned by wounds, burns, &c. there always arises in the neighbouring parts, which are inflamed, a preternatural distention of the small fibres and vessels; by which means the pain is renewed and continued. Every manifest solution of continuity does therefore, according to the explanation of distention just laid down, include within itself an infinite number of minute invisible solutions.

Hence we may ask, whether this minute invisible solution of continuity in the infinitesimal medullary particles of the brain be not that common limit, and middle point, which separates pleasure from pain, and of which the visible solutions of continuity, which are caused by external injuries, are a type, and also a means, *viz.* by propagating violent vibrations up to the brain? It is some presumption in favour of this position, that all conjectures concerning invisible things ought to be taken from visible ones of the same kind; also, that it is particularly suitable to the doctrine of vibrations; inasmuch as, laying down this doctrine, one may easily conceive how moderate and pleasant impressions may agitate the medullary particles in so moderate a degree, as that they shall again return to their former situations and connexions, when the agitation is over; whereas violent and painful ones may force the particles from thence, and give rise to new ones, *i. e.* to the solution of continuity. And as the body is so formed, that great and visible solutions of continuity may be healed again, and the parts restored, in great measure, to their primitive integrity and perfection, by the power of nature, unless where there is a loss of substance, (and yet even here the same end is obtained in part;) so we may suppose, that the power of nature restores all minute solutions of continuity in the constituent infinitesimal particles almost instantaneously, and so that the body receives no perceptible detriment from single instances, though it probably does from frequent repetitions; agreeably to which, it is generally supposed, that pain, by often returning, impairs the faculties, both bodily and mental.

Fourthly, The bones, nails, hair, and cuticle, may, consistently with the doctrine of vibrations, have a solution of continuity produced in their parts, without pain ensuing; for they are hard, and therefore incapable, as it seems, of receiving and communicating to the contiguous nerves, and thence to the brain, vibrations of any considerable degree of strength. We are also to suppose, that in palsies, mortifications, &c. changes of texture of somewhat a like kind are produced, so as to render the parts affected thereby incapable of conveying sensation to the medullary substance of the brain. Old age, inactivity, inflammation, pain, &c. are in like manner to be considered, as inducing such a degree of condensation, fixation, and callosity, in the medullary substance itself, as must end at last in insensibility and death.

Fifthly, It is not unsuitable to the doctrine of vibrations, that the frequent repetition of the same external impressions should

have the power of converting original pains into pleasures, and pleasures into mere sensations, *i. e.* into evanescent pleasures; as we find it has in fact. For this may be effected by such a change in the organ and brain, as that the organ shall send weaker and weaker vibrations perpetually to the brain, upon every successive renewal of the same impression, and the brain become perpetually less and less disposed to receive strong vibrations, though the power of communication from the impressions should continue the same. It remains therefore to be inquired, what general tendencies in the small medullary particles might dispose them to undergo such changes. And it appears to me, that a change of the spheres of attraction and repulsion in these particles, upon every change in their situations, so as always to lean towards the situation last superinduced, might be sufficient for this purpose. However, this is a mere supposition, and that of a very recluse nature. Only let it be observed, that the fact to be here accounted for, *viz.* the decrease in the efficacy of impressions frequently repeated, is both an evident one, and also must have its rise from some powers in the small parts of matter over each other. It must therefore admit of an explanation, either from the doctrine of vibrations, or from some other law of matter and motion. And if the doctrine of vibrations be found suitable to other phænomena, it may be presumed not to be unsuitable to this, till such time as some manifest inconsistency between them shall appear.

It ought to be remarked here, that this transit of original pains into pleasures, and of vivid pleasures into faint ones, by frequent repetition, bears some relation to the above-mentioned transition of pains into positive local pleasures, of the same kind with themselves.

To this head of consideration may be referred Dr. Jurin's observation; *viz.* "That when we have been for some time affected with one sensation, as soon as we cease to be so affected, a contrary sensation is apt to arise in us, sometimes of itself, and sometimes from such causes as at another time would not produce that sensation at all, or at least not to the same degree." For the continued impression of the same object will so fix upon the sensory nerve, and region of the brain corresponding thereto, a tendency to one peculiar sort of vibrations, that an impression of an opposite or very different sort, must do more than usual violence to the brain; *i. e.* will excite a glaring sensation of an opposite nature. See the instances mentioned by Dr. Jurin, in his Essay on distinct and indistinct Vision.

Sixthly, We may account for the different kinds and degrees of pleasure and pain, from the four differences of vibrations mentioned above, *viz.* those of degree, kind, place, and line of direction, and their various combinations with each other. For it is obvious to conceive, that these combinations may be sufficiently numerous and distinct from each other, to answer to the

facts. If the vibrations go beyond the common limit of pleasure and pain in one part of the brain, at the same time that they fall short of it in others, the result will be a pleasure or pain, according as this or that sort of vibrations prevails; and if they be nearly equal, it will be difficult to determine of which kind it is. If the vibrations fall a little short in all the parts, they will generate a high degree of pleasure; which, however, must be less than the least general pain, *i. e.* such a one wherein the vibrations go beyond the limits in all the parts: but it may be far greater than partial pains, or than those which affect only one particular region of the brain. Hence we may see, that the pains are in general greater than the pleasures; but then they are more rare for the same reason, being such violent states as cannot arise from common impressions. Or, if we suppose the pains to be frequent, they will then so far alter the disposition of the medullary substance, according to what was said above, as that many original pains will be converted into pleasures. Which indeed seems to be the case not unfrequently; for the organs of the new-born infant are so delicate, as to receive pain from many of those impressions which afterwards yield pleasure. But then, his sources of pleasure seem to be multiplied more than in proportion to what he suffers by this previous passage through pain.

In certain cases of excessive pains, the violent vibrations appear at last to excite a latent attractive power in the medullary particles, in the manner hereafter to be described, in respect of the fibres of the muscles and membranes, which puts a stop to those very vibrations that excited it. Hence faintings and stupors; *i. e.* the cessation of pain from violent pains. However, a greater degree of vibrations is probably required for exciting this attractive power in the medullary particles than in white fibres, and in white fibres than in red ones, as will appear hereafter.

It follows also, from the principles here laid down, that all the pleasures, though particularly different from each other, ought to have a general resemblance, in their circumstances and consequences; and the pains likewise.

Seventhly, All the mere sensations, which enter the mind by the five external senses, admit of a general analysis, upon the same principles as the pleasures and pains do. For all the mere sensations were, in their original state, either pleasures or pains; and vary now from their original state only by the diminution of the degree. Let therefore all the differences of kind, place, and line of direction, be combined in all their varieties, the degree being supposed every where evanescent; and we shall have all the particular vibrations from whence each mere sensation arises. This is the general account. But it is a most difficult problem to explain, by what differences of kind the particular sensations, either of the same or of different senses, are distinguished from each other.

It seems probable to me, that the limits of the seven primary colours, *viz.* the extreme red, the limit of the red and orange, of the orange and yellow, yellow and green, green and blue, blue and indigo, indigo and violet, and the extreme violet, excite vibrations in the optic nerve, whose times are proportional to the times of vibration of a string which sounds the notes in order, according to the key mentioned by Sir Isaac Newton in his Optics, *i. e.* the notes D, E, F, G, A, B, C, D. This hypothesis affords at least a probable reason for the several very particular breadths of the primary colours, in the prismatic oblong image of the sun, as I shall endeavour to show in its place, Prop. 56.

If the frequency of the vibrations excited by the several sapid and odorous bodies in the nerves of the tongue, and *membrana Schneideriana*, could be discovered, it is not improbable but this would be a clew to lead us into the inner constitution of natural bodies, since one may reasonably suppose, that each sapid and odorous body excites vibrations of the same frequency as those which take place in it before it is tasted or smelt to.

The solution of the same problem in the several senses might also a little unfold to us the different internal structure of the several nerves, and of the parts of the brain that correspond thereto. For it seems probable to me, that each nerve and region is originally fitted to receive, and, as one may say, sympathize with, such vibrations as are likely to be impressed upon them in the various incidents of life; and not that the auditory nerve could perform the office of the optic, if put into its place, or *vice versá*, &c. according to Raw.

Eighthly, It is observed by medical writers, that pain is apt to excite a contraction in the fibres of the neighbouring membranes. Now this is very agreeable to that power which sensory vibrations have, in general, over the red fleshy muscles, for contracting them, in the manner to be described hereafter. For since vibrations of a middle strength, by descending into the red fibres of the muscles, are sufficient to contract them in the ordinary functions and actions of life; it is not unreasonable to expect, that the stronger vibrations, which attend pain, should be sufficient to contract the pale fibres of membranes, though these be in themselves of a less contractile disposition.

It is agreeable to this, that titillation and itching, which lie, as it were, upon the confines of pleasure and pain, are more apt to diffuse themselves over the neighbouring parts than pain. For titillation and itching only agitate the small particles of the membranes, and therefore run along their surfaces, by the successive communication of these agitations; whereas, pain, by contracting the fibres, puts a stop to these agitations, and consequently to its own diffusion over the neighbouring parts.

Ninthly, Extreme and pointed parts, such as the extremity of the nose, the uvula, the epiglottis, the nipples, and the ends of

the fingers, are in general more subject to irritation, itching, and inflammation, and endued with a greater degree of sensibility, than the other parts. Now this phænomenon agrees with the doctrine of vibrations, inasmuch as such parts must, according to the Newtonian hypothesis, be surrounded with an æther of a greater density than that within their pores, and which also grows denser and denser, in a regular manner. For one may conceive, that the vibrations communicated to this denser æther will be stronger in proportion to its density; and consequently, that they will agitate the small particles of the extreme parts also with vibrations stronger than ordinary.

It is true, indeed, that the sensibility of each part does depend, in great measure, on the number, structure, and disposition, of the nervous papillæ, which are the immediate organ in the senses of feeling, taste, and smell; but then we may remark, that the same observation holds in respect of these nervous papillæ. For they are also extreme and pointed parts; and that especially, if we suppose, which seems probable, that when any part is in a state of exquisite sensibility, the nervous papillæ are erected, (in some such manner as the hairs of the neck and back in certain animals, when enraged,) so as to recede from each other, and, consequently, to admit the denser æther between them. They may also, upon the same occasions, be made turgid, by the constriction of their bases, and thus have their sensibility or power of receiving vibrations, increased by distention.

We may remark likewise, in pursuing this method of reasoning, that the æther which lies contiguous to the medullary substance in the ventricles of the brain, is denser than that which lies in the medullary substance itself. May we not therefore conjecture, that one use of the cavities of the ventricles is to increase and keep up all the vibrations propagated from the external nerves into the medullary substance of the brain, by means of the denser æther lodged in those cavities; that blood and serum extravasated, and lying in the ventricles, suffocate sensations, by excluding this denser æther, as well as by pressing on the medullary substance; and lastly, that those brutes whose olfactory nerves have cavities within them continued from the ventricles, are more acute than men, in perceiving odours, and distinguishing them from each other, in part, upon this account?

Boerhaave is, indeed, of opinion, that the opposite sides of the ventricle always touch each other, so as to leave no cavity. But it seems more reasonable to suppose, that a subtle vapour, which is exhaled from the vessels of the investing membrane, and whose particles, like the vapour of water, have a repulsive power, in respect of each other, prevents the absolute mutual contact of the opposite sides, in common cases. And the same thing is favoured by the experiments tried upon the Parisian beggar. Since the brain in him could be somewhat pressed in, it seems that the skull was not entirely full before.

PROP. VII.—*The Phænomena of Sleep appear to be very suitable to the Doctrine of Vibrations.*

HERE I observe, first, that new-born children sleep almost always. Now this may be accounted for by the doctrine of vibrations, in the following manner:—The foetus sleeps always, having no sensation from without impressed upon it, and only becomes awake upon its entrance into a new world, *viz.* by means of the vigorous vibrations which are impressed upon it. It is reasonable therefore to expect, that the new-born child should fall back into its natural state of sleep, as soon as these vibrations cease, and return again to a state of vigilance only from the renewal of vigorous impressions; and so on alternately, agreeably to the fact.

Secondly, Even adults are disposed to sleep, when the impressions of external objects are excluded, and their bodies kept in a state of rest, for the same reasons as those just mentioned in the similar state of young children. However, they incline more to vigilance than children, partly because their solids and fluids are more active, and less compressible, *i. e.* more susceptible and retentive of vibrations; and partly, because association brings in perpetual trains of ideas, and consequently of vibrations, sufficiently vivid to keep up vigilance in common cases.

Thirdly, Having presented the reader with the two foregoing observations, which are of a very obvious kind, I will now inquire, with more minuteness, into the intimate and precise nature of sleep. It appears, then, that during sleep the blood is accumulated in the veins, and particularly in the venal sinuses which surround the brain and spinal marrow; and also that it is rarefied, at least for the most part. For as the actions of the muscles squeeze the blood out of the veins during vigilance, so their inactivity during sleep suffers the blood to lodge in the veins; and the decumbent posture, which is common to animals in sleep, suffers it to lodge particularly in the venal sinuses of the brain and spinal marrow. And it is agreeable to this, that, in most dissections, the blood is found chiefly in the veins; and in dissections after lethargies, apoplexies, &c. the venal sinuses of the brain, and consequently those of the spinal marrow, which communicate freely with them, are particularly full. As to the rarefaction of the blood, it follows from the warmth of the body, which is an usual attendant upon sleep, and is caused by the rest of the body, the warmth of the place where the person sleeps, the coverings, and the fermentative disposition of the fresh chyle, which then enters the blood. It follows, therefore, that the brain and spinal marrow will be particularly compressed during sleep; since the blood then takes up more space, is particularly accumulated within the cavities of the skull and vertebræ, and the hardness of these bones will not suffer them to yield, or make more room. It follows, also, that the softness of the medullary substance will subject it to the effects of this compression, more than

the cortical; so that, if we suppose its functions to consist in receiving, retaining, and communicating vibrations, it will be rendered peculiarly unfit for these functions, from the compression here mentioned; *i. e.* the animal will be indisposed to sensation and motion, agreeably to observation.

There are many other arguments which might be brought to shew, that during sleep, and sleepy distempers, the brain is particularly compressed, if it were necessary. But the instance of the Parisian beggar above noted, is most to this purpose. This person had a perforation in his skull, which did not ossify; whence, by external pressure upon that part, the internal regions of the brain might be affected; and it was constantly observed, that, as the pressure increased, he grew more and more sleepy, and at last fell into a temporary apoplexy.

In young children, there seems to be a constant moderate pressure of the skull upon the brain. For the brain is of a great relative magnitude in them; and by its endeavour to expand itself, it keeps the sutures from uniting too firmly, till such time as it is arrived at its full growth. It must therefore be compressed in return, by the re-action of the skull. And this may be considered as a circumstance, which concurs to render young children more apt to sleep than adults. When old persons are sleepy, it is a morbid affection, and may arise either from an hydropical disposition, whereby the turgescence of the neighbouring parts compresses the medullary substance; or from a defect of nutrition in this substance, which renders it soft and compressible in a preternatural degree. If the venal sinuses, and other blood-vessels, of the brain, be by any accident preternaturally distended, and continue so for a considerable time, they will scarce ever recover their pristine tone and dimensions; and this so much the more, as the person approaches to old age.

For the same reason, as the medullary substance within the skull and vertebræ is compressed during sleep, that of the ganglions, plexuses, and trunks of the nerves, in other parts of the body, will be compressed also, though in a less degree. For this substance has no blood or gross fluids within it, and is far the softest of all the parts of the body; and the membranes, which invest all the parts of the body, perform the same office to them, in a less degree, as the skull does to the brain, *i. e.* check their distention. The surrounding membranes must therefore compress the soft medullary substance in the ganglions, plexuses, and trunks of the nerves, during sleep, on account of the rarefaction of the humours at that time; whence, according to the doctrine of vibrations, sensory ones can neither ascend freely from the external organs to the brain, nor motory ones descend into the limbs; *i. e.* the animal will be insensible and inactive, as it is found to be in fact.

Is it not probable, that, as sleep comes on, the opposite sides of the ventricles of the brain approach towards each other, on

account of the compression here asserted; also, that they become contiguous at the instant of sleep, excluding the denser æther, mentioned in the foregoing proposition, thereby? By this means, the power of sensation would receive a remarkable diminution at the instant of falling asleep, as it seems to do. There might also, in certain circumstances, arise a very vivid exertion of the perceptive and motive faculties at that instant, from the compression of the æther previous to its rarefaction, such as would account for the sudden terrors and startings which happen at the instant of going to sleep, in some morbid cases.

Fourthly, It is observed, that vigilance continued, fatigue, and pain, all dispose strongly to sleep. For all vigorous or long-continued vibrations must both generate heat, whereby the blood and juices will be rarefied, so as to compress the medullary substance, and also exhaust this substance of its fluid and active particles, so as to render it more easily compressible, and less susceptible and retentive of vibrations. Great degrees of heat seem to produce an extraordinary propensity to sleep, in nearly the same way.

And when persons exposed to extreme cold are overcome by a pleasing but fatal sleep, it seems as if the internal parts were affected with a preternatural warmth, from the vigorous sensations and concomitant vibrations impressed on the external parts by the cold, and thence ascending to the brain. It agrees with the hypothesis here proposed, that these uneasy sensations decline by degrees, till they fall within the limits of pleasure, and at last end in insensibility. This sleep may prove fatal, from the great difference between the internal and external parts, in respect of heat; also from the cold's penetrating farther and farther. Muscular motion may prevent it, and its ill effects, partly as the veins are emptied by this, partly as it warms the external parts, and cools the internal, from the return of the cool blood into the course of the circulation. If we suppose the circulation to cease entirely at the surface of the body, from the cold, then will warm blood circulate through the internal parts alone; and these parts will continue to be defended from the cold by the external ones, for a time. And thus the body will approach to the common state of a person going to sleep.

It is easy to see, from the method of reasoning here used, how persons recovering from long illnesses should be much disposed to sleep, *viz.* from the exhaustion of the medullary substance, their almost constant rest, their being kept warm, and the frequent taking sustenance, so as to beget great quantities of fresh chyle, and consequently, an extraordinary degree of a fermentative heat.

Fifthly, The manner in which opiates produce sleep, may be thus explained, agreeably to the doctrine of vibrations. Opiates evidently excite grateful sensations in the stomach and bowels. This appears from the short time in which liquid opiates take

effect; and even from immediate and direct sensations. A person may even feel, that the stomach is the seat of the pleasurable impressions made by opiates. We are to suppose therefore, that vivid vibrations, which, however, lie within the limits of pleasure, ascend perpetually from the stomach and bowels, along the *par vagum*, and intercostal nerves, up to the brain and spinal marrow, diffuse themselves over these, and from thence descend along the nerves into all the parts of the body. Hence it follows, that they will obscure and overpower all moderate sensations, or vibrations, which subsisted before, or which external objects may from time to time endeavour to excite, and introduce a general pleasurable state over the whole nervous system; with trains of pleasurable ideas, in the manner to be explained hereafter, when we come to treat of ideas, their generation, associations, and dependencies on bodily states. During this pleasurable state, the body will of course be composed to rest; restlessness, tossings, and changes of posture, being caused, for the most part, by uneasy sensations. Hence the blood will be accumulated in the veins and venal sinuses, and grow warm both from the vigorous vibrations excited by the opiate, and from the absolute rest of the body. For absolute rest conduces, in a peculiar manner, to make the body grow warm by the heat reflected from the contiguous coverings; as, on the contrary, the slightest motions frequently returning ventilate and cool the parts. And thus the compression of the medullary substance requisite for sleep will be induced by the action of the opiate upon the stomach and bowels.

But, besides this, we may conceive, that the opiate particles excite vibrations of the same kind in all the parts of the body, after they are taken into the blood, and circulate with it, till such time as, by a perfect assimilation, they lose all their peculiar qualities.

It seems, also, that the continued descent of vibrations, from the brain, and spinal marrow, into the limbs, and external parts, agitates them so much, as to render them unfit for receiving sensation and motion, in the same manner as continued friction of the head, when newly shaved, or shaking the hand, occasion a kind of numbness in the head and hand respectively. For a disorder raised in the motory nerves and muscular fibres, analogous to numbness in the sensory nerves, and sentient papillæ, must produce ineptitude to motion. It seems, therefore, that the insensibility and immobility which proceed from opiates, and which concur in hastening the sleep, and increasing its degree, arise in great part from this cause. The numbness, and paralytic weaknesses, which frequently succeed after opiates, are evidences for what is here alleged.

Opium seems to have an intermediate degree of activity between narcotics, or stupifying poisons, on one hand, and grateful aliments, particularly vinous liquors, on the other. Narcotics operate so violently on the stomach and bowels, the brain, and

the external parts, as to bring confusion on the sensations, and trains of ideas, and convulsions on the muscular system. And that these effects are produced by a local influence on the stomach, in the manner proposed concerning opiates, appears, because they cease, or abate much, soon after the narcotic is ejected by vomiting; also because whipping a dog, after he has taken the nux vomica, contributes to obviate its ill effects. Wines, and grateful aliments, dispose to sleep, partly by their immediate effects on the stomach, partly by their effects after they are absorbed. But the degree not being so great as in opiates, it may more easily be overcome by a variety of common or vigorous impressions; in which case the vivid vibrations, excited by the wine or aliment, will illuminate all the impressions, and add strength to all the motions. The same thing is observed of opiates, in those who take them frequently.

Sixthly, Chylification, sanguification, nutrition, and growth, seem to proceed best during sleep. This may be conjectured from the sleepiness of all animals after eating, since sleep and chylification, &c. must here concur; and from the almost constant sleep of new-born children, above taken notice of, since nature seems chiefly intent on the due performance of these functions, for some time after birth. Now the doctrine of vibrations may be made to illustrate these points, in some measure. For since respiration becomes strong and convulsive at the instant of going to sleep, it will renew and increase the vibrations excited in the nerves of the stomach and bowels by their contents, which we must suppose to have languished before, in the same manner as those which subsisted in the external senses. The organs of digestion therefore, as well as those of respiration, are in a state of vigilance, and are intent upon the performance of their proper functions, while the other parts are in a state of sleep and inaction, and recruiting, in order to perform their functions in a due manner, upon a return of vigilance. And this holds most particularly in respect of the medullary substance of the brain, spinal marrow, and nerves, which, by the consent of all, is the chief instrument of nutrition and growth. Since the vibrations which take place in it during sleep are languid, it will then be filled and recruited, and consequently fitted for nutrition and growth; which will be farther favoured by the concurrence of a complete chylification and sanguification, at the same time.

The increased convulsive respiration, and increased force of the heart, which take place at the instant of going to sleep, and continue frequently during sleep, may perhaps be thus accounted for, agreeably to the doctrine of vibrations. When vivid vibrations cease in the external senses, and regions of the brain belonging to them, also in the muscles of the limbs, and parts of the spinal marrow corresponding thereto, this abatement of vibrations must either extend to the whole medullary substance, which seems to be the case in the night-mare; or if the

nerves of the heart, and organs of respiration, and the regions of the brain and spinal marrow corresponding thereto, be exempted, they may be agitated even with more vigorous vibrations, on account of the abatement in the other parts, because the vibrations raised in these regions during sleep, by such of their causes as take place then, will be hindered from diffusing themselves freely, and abating their own force thereby, as soon as the other regions are collapsed and compressed. These causes are, first, the heat of the blood, and pulsation of the arteries of the medullary substance; both which, when increased on any account, must farther increase themselves by a reflected influence, since both increase the force of the heart. Secondly, the fulness and distention of the lungs. These arise from the rarefaction of the blood, and accumulation of it in the veins just before sleep (at which time respiration is languid), and must at last stimulate the organs of respiration to a vigorous exertion of themselves; *i. e.* raise vigorous vibrations in the region of the brain corresponding thereto, just as in the cases of sighing, and recovering from the night-mare. Thirdly, we may suppose, that the heart, and muscles of respiration, do not exert themselves during vigilance, with a degree of force at all approaching to their utmost powers, as the limbs do; and therefore, that they, and the corresponding regions of the brain, may be qualified for a vigorous exertion during sleep. Fourthly, an increase in the force of respiration must also increase the force with which the heart moves, because it propels the blood in greater quantities upon the heart. Fifthly, an increase of force in the heart must increase both itself and the action of respiration, because the blood-vessels of the heart and organs of respiration are particularly near to the heart, and therefore must be particularly under its influence.

COR. I. By laying together what has been delivered concerning sleep, in this proposition, the difference between the states of sleep and vigilance may be thus set before the reader, in one view. In sleep, the nerves of the five external senses are indisposed to receive vibrations, and the objects themselves are either absent, or impressed feebly. The nerves of the stomach and bowels sympathize with these at first, but recover themselves at the instant of sleep, the impressions of the aliment, &c. being then made with unusual vigour; and this continues during the time of sleep. In like manner the muscular system becomes inactive in general; the heart, however, and muscles and respiration, are excepted, and even exert themselves with an extraordinary degree of force. The blood is rarefied so as to take up more space upon the whole; and as there is more in the veins, and particularly in those of the brain, and spinal marrow, than in a state of vigilance, the medullary substance is hereby exposed to a constant uniform compression; whereas, in vigilance, the action of the muscles squeezes the blood out of the veins, and cools it, unless this action be violent, or long continued.

The glands are filled during sleep, and consequently, by drawing off from the fulness of the blood-vessels, prepare the body for vigilance, and are themselves fitted for the functions to be then performed; *i. e.* to excrete their proper fluids from muscular compression, or vibrations running up their excretory ducts, in the manner to be hereafter explained. The medullary substance is, in like manner, fitted and prepared for vigilance, whether it be of a glandular nature, or not. However, some vibrations must take place in it throughout, and they are particularly vivid in the regions corresponding to the heart, organs of respiration, and organs of digestion; also in the regions corresponding to the eye and ear, where they excite the trains of images which are presented to us in our dreams. But the nature of these cannot be unfolded till we have treated of ideas, their generation, and associations, and the nature of true and erroneous judgments, assent, dissent, imagination, and memory.

Cor. II. It appears also to follow, from the foregoing account of sleep, and the effect of heat, labour, pain, and opiates, in disposing to it, that, in many cases of sleep, the medullary substance tends to a subtle kind of inflammation, and is preserved from it, and restored to its natural state and degree of heat, by means of sleep sufficiently continued. Thus, in the access of most fevers, the patient is listless and sleepy, the external senses, muscles, and brain, being affected, in some respects, as by opiates. If the patient sleep, the distemper is cut short; but if the subtle inflammation be so great as to prevent that, the distemper increases, and comes to its period in some other way, according to the nature of the fever, and circumstances of the patient. In a *coma vigil* it seems to me, that the approach of the opposite sides of the ventricles excites such violent vibrations, on account of the inflammation of the medullary substance, perhaps of these sides particularly, as to awake the patient, and throw him into great confusion and consternation. In a phrenzy, the medullary substance itself seems to labour under an acute temporary inflammation, the other parts having often no more than a due heat, whereas, in the delirium of a fever, the medullary substance only sympathizes with the other parts. If the inflammation of the medullary substance be very subtle, moderate, and permanent, madness of some species ensues. And it seems to agree very well with the theory here proposed, that in deliriums, phrenzies, and some kinds of madness, the patient does not sleep at all, or if he do, in a quiet manner, is freed from his distemper; and that, in other kinds of madness, and in cases of melancholy, the sleep is very deep, and the patient extremely sluggish.

SECT. II.

OF IDEAS, THEIR GENERATION AND ASSOCIATIONS; AND OF THE AGREEMENT OF THE DOCTRINE OF VIBRATIONS WITH THE PHENOMENA OF IDEAS.

PROP. VIII.—*Sensations, by being often repeated, leave certain Vestiges, Types, or Images, of themselves, which may be called, Simple Ideas of Sensation.*

I TOOK notice in the Introduction, that those ideas which resemble sensations were called ideas of sensation; and also that they might be called *simple* ideas, in respect of the intellectual ones which are formed from them, and of whose very essence it is to be *complex*. But the ideas of sensation are not entirely simple, since they must consist of parts both co-existent and successive, as the generating sensations themselves do.

Now, that the simple ideas of sensation are thus generated, agreeably to the proposition, appears, because the most vivid of these ideas are those where the corresponding sensations are most vigorously impressed, or most frequently renewed; whereas, if the sensation be faint, or uncommon, the generated idea is also faint in proportion, and, in extreme cases, evanescent and imperceptible. The exact observance of the order of place in visible ideas, and of the order of time in audible ones, may likewise serve to shew, that these ideas are copies and offsprings of the impressions made on the eye and ear, in which the same orders were observed respectively. And though it happens, that trains of visible and audible ideas are presented in sallies of the fancy, and in dreams, in which the order of time and place is different from that of any former impressions, yet the small component parts of these trains are copies of former impressions; and reasons may be given for the varieties of their compositions.

It is also to be observed, that this proposition bears a great resemblance to the third; and that, by this resemblance, they somewhat confirm and illustrate one another. According to the third proposition, sensations remain for a short time after the impression is removed; and these remaining sensations grow feebler and feebler, till they vanish. They are therefore, in some part of their declension, of about the same strength with ideas, and in their first state, are intermediate between sensations and ideas. And it seems reasonable to expect, that, if a single sensation can leave a perceptible effect, trace, or vestige, for a short time, a sufficient repetition of a sensation may leave a perceptible effect of the same kind, but of a more permanent nature, *i. e.* an idea, which shall recur occasionally, at long distances of time, from the impression of the corresponding sensation, and *vice versá*. As to the occasions and causes, which

make ideas recur, they will be considered in the next proposition but one.

The method of reasoning used in the last paragraph is farther confirmed by the following circumstance; *viz.* that both the diminutive declining sensations, which remain for a short space after the impressions of the objects cease, and the ideas, which are the copies of such impressions, are far more distinct and vivid, in respect of visible and audible impressions, than of any others. To which it may be added, that, after travelling, hearing music, &c. trains of vivid ideas are very apt to recur, which correspond very exactly to the late impressions, and which are of an intermediate nature between the remaining sensations of the third proposition, in their greatest vigour, and the ideas mentioned in this.

The sensations of feeling, taste and smell, can scarce be said to leave ideas, unless very indistinct and obscure ones. However, as analogy leads one to suppose that these sensations may leave traces of the same kind, though not in the same degree, as those of sight and hearing; so the readiness with which we reconnoitre sensations of feeling, taste, and smell, that have been often impressed, is an evidence that they do so; and these generated traces or dispositions of mind may be called the ideas of feeling, taste, and smell. In sleep, when all our ideas are magnified, those of feeling, taste, and smell, are often sufficiently vivid and distinct; and the same thing happens in some few cases of vigilance.

PROP. IX.—*Sensory Vibrations, by being often repeated, beget, in the medullary Substance of the Brain, a Disposition to diminutive Vibrations, which may also be called Vibratiuncles, and Miniatures, corresponding to themselves respectively.*

THIS correspondence of the diminutive vibrations to the original sensory ones, consists in this, that they agree in kind, place, and line of direction; and differ only in being more feeble, *i. e.* in degree.

This proposition follows from the foregoing. For since sensations, by being often repeated, beget ideas, it cannot but be that those vibrations, which accompany sensations, should beget something which may accompany ideas in like manner; and this can be nothing but feebler vibrations, agreeing with the sensory generating vibrations in kind, place, and line of direction.

Or thus: By the first proposition it appears, that some motion must be excited in the medullary substance, during each sensation; by the fourth, this motion is determined to be a vibratory one: since therefore some motion must also, by the second, be excited in the medullary substance during the presence of each idea, this motion cannot be any other than a vibratory one: else how should it proceed from the original vibration attending the sensation, in the same manner as the idea does from the sensation

itself? It must also agree in kind, place, and line of direction, with the generating vibration. A vibratory motion, which recurs t times in a second, cannot beget a diminutive one that recurs $\frac{1}{2} t$, or $2 t$ times; nor one originally impressed on the region of the brain corresponding to the auditory nerves, beget diminutive vibrations in the region corresponding to the optic nerves; and so of the rest. The line of direction must likewise be the same in the original and derivative vibrations. It remains therefore, that each simple idea of sensation be attended by diminutive vibrations of the same kind, place, and line of direction, with the original vibrations attending the sensation itself: or, in the words of the proposition, that sensory vibrations, by being frequently repeated, beget a disposition to diminutive vibrations corresponding to themselves respectively. We may add, that the vibratory nature of the motion which attends ideas, may be inferred from the continuance of some ideas, visible ones for instance, in the fancy for a few moments.

This proof of the present proposition from the foregoing appears to be incontestable, admitting the fourth: however, it will much establish and illustrate the doctrines of vibrations and association, to deduce it directly, if we can, from the nature of vibratory motions, and of an animal body; and not only from the relation between sensations and ideas. Let us see, therefore, what progress we can make in such an attempt.

First, then, if we admit vibrations of the medullary particles at all, we must conceive, that some take place in the *fœtus in utero*, both on account of the warmth in which it lies, and of the pulsation of those considerable arteries, which pass through the medullary substance, and which consequently must compress and agitate it upon every contraction of the heart. And these vibrations are probably either uniform in kind and degree, if we consider short spaces of time; or, if long ones, increase in a slow uniform manner, and that in degree only, as the *fœtus in utero* increases in bulk and strength. They are also probably the same in all the different regions of the medullary substance. Let these vibrations be called the *natural vibrations*.

Secondly, As soon as the child is born, external objects act upon it violently, and excite vibrations in the medullary substance, which differ from the natural ones, and from each other, in degree, kind, place, and line of direction. We may also conceive that each region of the medullary substance has such a texture as to receive, with the greatest facility, the several specific vibrations, which the objects corresponding respectively to these regions, *i. e.* to their nerves, are most disposed to excite. Let these vibrations be, for the present, called *preternatural ones*, in contradistinction to those which we just now called *natural ones*.

Thirdly, Representing now the natural vibrations by N , and the preternatural ones, from various objects, by A, B, C , &c. let us suppose the first object to impress the vibrations A , and then

to be removed. It is evident from the nature of vibratory motions, that the medullary substance will not, immediately upon the removal of this object, return to its natural state N , but will remain, for a short space of time, in the preternatural state A , and pass gradually from A to N . Suppose the same object to be impressed again and again, for a sufficient number of times, and it seems to follow, that the medullary substance will be longer in passing from A to N , after the second impression than after the first, after the third impression than second, &c. till, at last, it will not return to its natural original state of vibration N at all, but remain in the preternatural state A , after the vibrations have fallen to a diminutive pitch, their kind and place, or chief seat, and their line of directions, continuing the same. This state may therefore be fitly denoted by a , and, being now in the place of the natural state N , it will be kept up by the heat of the medullary substance, and the pulsation of its arteries. All this seems to follow from the above-mentioned disposition of animal bodies to accommodate themselves to, and continue in, almost any state that is often impressed; which is evident from innumerable both common and medical observations, whatever be determined concerning the manner of explaining and accounting for these facts. For the alterations which habit, custom, frequent impression, &c. make in the small constituent particles, can scarce be any thing besides alterations of the distances, and mutual actions, of these particles; and these last alterations must alter the natural tendency to vibrate. We must, however, here resume the supposition made in the last paragraph, *viz.* that the several regions of the brain have such a texture as disposes them to those specific vibrations, which are to be impressed by the proper objects in the events of life. And this will much facilitate and accelerate the transition of the state N into a ; since we are to suppose a predisposition to the state A , or a .

It will somewhat illustrate and confirm this reasoning, to remark, that musical strings always accommodate themselves to, and lean towards the state into which they were last put. Thus the tone of a musical string either rises or falls upon altering its tension, according as the preceding tension was greater or less than its present tension. Now the small component parts of a musical string must recede from, and approach to, each other, *i. e.* must oscillate lengthways, during every transverse oscillation of the string. And this must arise from the mutual influences of the component particles tending to their last superinduced state. Let us suppose something analogous to this to take place in the component molecules of the brain, the molecules of the molecules, &c. and it will follow, that A may overpower N , and a become the natural state. Now, since the human body is composed of the same matter as the external world, it is reasonable to expect, that its component particles should be

subjected to the same subtle laws. And the exquisite structure of animal bodies in so many other respects, makes it easier to conceive, that the organ of organs, *viz.* the medullary substance, should be endued with a proper subtle ultimate structure, for the purpose of retaining a state that is frequently impressed. One may guess also, that it is better suited to this purpose during its growth, *i. e.* in passing from infancy to adult age, than afterwards; as this would be very agreeable to the phenomena.

Fourthly, Suppose now the vibrations *A, B, C, D, &c.* belonging to each of the senses, to be excited, and repeated in such order and manner as usually happens to the new-born infant upon its entrance into this new scene of things. It is evident, that these will have a greater power to overrule the natural state *N*, than the vibrations *A* from one single object could have: for *A* affected only one region of the medullary substance primarily; whereas *A, B, C, D, &c.* affect all the regions primarily in their turn. It is evident also, that the secondary vibrations, or those which are propagated from the region of the medullary substance primarily affected into the rest, will be overruled, in great measure, in each region, by the primary vibrations peculiar to that region. Lastly, It is evident, that of the vibrations which are excited in each region, no one can prevail over all the rest, but each must leave an effect, in proportion to its strength and frequency. We may conceive, therefore, that each region of the medullary substance will have a tendency generated in it to vibrate with vibrations of the same frequency (but weaker in degree) as those which the several appropriated objects impress upon it respectively; and that diminutive vibrations resembling them will rise in succession in each region. For each region may easily be conceived to lean sometimes to the vibrations from one object, sometimes to those from another, according to the strength, frequency, and novelty of the impression, the then present disposition of the nervous system, association (of which in the two next propositions), and other such-like causes. And for the same reason, as in every sense the idea of some one object of that sense must prevail over all the rest, we may conclude, that sometimes the ideas belonging to one sense, sometimes those belonging to another, will prevail over the rest.

Or thus: Some vibrations there must always be in the medullary substance, on account of its heat, and the pulsation of the arteries which pass through it. These cannot be the natural ones *N*, because they will soon be overruled by the great force and variety of impressions made on the new-born infant, which must also dispose each region of the brain to lean to some or other of those vibrations which are excited in it primarily. Hence we may conceive, that a very complex set of vibrations, arising from the mixture and combinations of degree, kind, place, and line of direction, exists always in the medullary substance, being kept up by its heat, and the pulsation of its arteries, when

other causes are wanting, almost in the same manner as in a concert of music the air is agitated by vibrations of a very complex kind. But then, as in a concert, some one instrument generally strikes the ear more than the rest, so of the complex vibrations which exist in the medullary substance, some one part will prevail over the rest, and present the corresponding idea to the mind. Some region must be disposed, at each instant, to vibrate stronger than the rest; and of the specific vibrations which are generally impressed upon this region, some one will have a more favourable concurrence of circumstances than the rest. And thus it will follow, according to the terms of the proposition, that sensory vibrations, by being sufficiently repeated, will beget a disposition to miniature vibrations corresponding to them respectively; or, using the appellations above assumed, that *A, B, C, &c.* will beget *a, b, c, &c.*

If we allow the proof of this proposition thus deduced from the nature of vibratory motions, and of an animal body, the foregoing proposition will follow from it, and hold equally, in respect of the senses of feeling, taste, and smell, as of sight and hearing. Or, in other words, if we allow that original impressed vibratory motions leave a tendency to miniature ones of the same kind, place, and line of direction, it will follow, that sensations must beget ideas, and that not only in the senses of sight and hearing, where the ideas are sufficiently vivid and distinct, but in the three others, since their sensations are also conveyed to the mind by means of vibratory motions. We may also perhaps discover hereafter, from the nature of vibratory motions, and of the human brain, compared with the circumstances of life, why the ideas of one sense are more vivid and distinct than those of another.

PROP. X.—*Any Sensations A, B, C, &c. by being associated with one another a sufficient Number of Times, get such a Power over the corresponding Ideas a, b, c, &c. that any one of the Sensations A, when impressed alone, shall be able to excite in the Mind, b, c, &c. the Ideas of the rest.*

SENSATIONS may be said to be associated together, when their impressions are either made precisely at the same instant of time, or in the contiguous successive instants. We may therefore distinguish association into two sorts, the synchronous, and the successive.

The influence of association over our ideas, opinions, and affections, is so great and obvious, as scarcely to have escaped the notice of any writer who has treated of these, though the word *association*, in the particular sense here affixed to it, was first brought into use by Mr. Locke. But all that has been delivered by the ancients and moderns, concerning the power of habit, custom, example, education, authority, party-prejudice, the

manner of learning the manual and liberal arts, &c. goes upon this doctrine as its foundation, and may be considered as the detail of it, in various circumstances. I here begin with the simplest case, and shall proceed to more and more complex ones continually, till I have exhausted what has occurred to me upon this subject.

This proposition, or first and simplest case of association, is manifest from innumerable common observations. Thus, the names, smells, tastes, and tangible qualities of natural bodies, suggest their visible appearances to the fancy, *i. e.* excite their visible ideas; and, *vice versâ*, their visible appearances impressed on the eye raise up those powers of reconnoitring their names, smells, tastes, and tangible qualities, which may not improperly be called their ideas, as above noted; and in some cases raise up ideas, which may be compared with visible ones, in respect of vividness. All which is plainly owing to the association of the several sensible qualities of bodies with their names, and with each other. It is remarkable, however, as being agreeable to the superior vividness of visible and audible ideas, before taken notice of, that the suggestion of the visible appearance from the name is the most ready of any other; and, next to this, that of the name from the visible appearance; in which last case, the reality of the audible idea, when not evident to the fancy, may be inferred from the ready pronunciation of the name. For it will be shewn hereafter, that the audible idea is most commonly a previous requisite to pronunciation. Other instances of the power of association may be taken from compound visible and audible impressions. Thus the sight of part of a large building suggests the idea of the rest instantaneously; and the sound of the words which begin a familiar sentence, brings the remaining part to our memories in order, the association of the parts being synchronous in the first case, and successive in the last.

It is to be observed, that, in successive associations, the power of raising the ideas is only exerted according to the order in which the association is made. Thus, if the impressions *A, B, C*, be always made in the order of the alphabet, *B* impressed alone will not raise *a*, but *c* only. Agreeably to which it is easy to repeat familiar sentences in the order in which they always occur, but impossible to do it readily in an inverted one. The reason of this is, that the compound idea, *c, b, a*, corresponds to the compound sensation *C, B, A*; and therefore requires the impression of *C, B, A*, in the same manner as *a, b, c*, does that of *A, B, C*. This will, however, be more evident, when we come to consider the associations of vibratory motions, in the next proposition.

It is also to be observed, that the power of association grows feebler, as the number either of synchronous or successive impressions is increased, and does not extend, with due force, to more than a small one, in the first and simplest cases. But, in

complex cases, or the associations of associations, of which the memory, in its full extent, consists, the powers of the mind, deducible from this source, will be found much greater than any person, upon his first entrance on these inquiries, could well imagine.

PROP. XI.—*Any Vibrations, A, B, C, &c. by being associated together a sufficient Number of Times, get such a Power over a, b, c, &c. the corresponding Miniature Vibrations, that any of the Vibrations A, when impressed alone, shall be able to excite b, c, &c. the Miniatures of the rest.*

THIS proposition may be deduced from the foregoing, in the same manner as the ninth has been from the eighth.

But it seems also deducible from the nature of vibrations, and of an animal body. Let *A* and *B* be two vibrations, associated synchronically. Now, it is evident, that the vibration *A* (for I will, in this proposition, speak of *A* and *B* in the singular number, for the sake of greater clearness) will, by endeavouring to diffuse itself into those parts of the medullary substance which are affected primarily by the vibration *B*, in some measure modify and change *B*, so as to make *B* a little different from what it would be, if impressed alone. For the same reasons the vibration *A* will be a little affected, even in its primary seat, by the endeavour of *B* to diffuse itself all over the medullary substance. Suppose now the vibrations *A* and *B* to be impressed at the same instant, for a thousand times; it follows, from the ninth proposition, that they will first overcome the disposition to the natural vibrations *N*, and then leave a tendency to themselves, which will now occupy the place of the original natural tendency to vibrations. When therefore the vibration *A* is impressed alone, it cannot be entirely such as the object would excite of itself, but must lean, even in its primary seat, to the modifications and changes induced by *B*, during their thousand joint impressions; and therefore much more, in receding from this primary seat, will it lean that way; and when it comes to the seat of *B*, it will excite *B*'s miniature a little modified and changed by itself.

Or thus: When *A* is impressed alone, some vibration must take place in the primary seat of *B*, both on account of the heat and pulsation of the arteries, and because *A* will endeavour to diffuse itself over the whole medullary substance. This cannot be that part of the natural vibrations *N*, which belongs to this region, because it is supposed to be overruled already. It cannot be that which *A* impressed alone would have propagated into this region, because that has always hitherto been overruled, and converted into *B*; and therefore cannot have begotten a tendency to itself. It cannot be any full vivid vibration, such as *B*, *C*, *D*, &c. belonging to this region, because all full vibrations require the actual impression of an object upon the corresponding external

organ. And of miniature vibrations belonging to this region, such as b , c , d , &c. it is evident, that b has the preference, since A leans to it a little, even in its own primary seat, more and more, in receding from this, and almost entirely, when it comes to the primary seat of B . For the same reasons B impressed alone will excite a ; and, in general, if A , B , C , &c. be vibrations synchronically impressed on different regions of the medullary substance, A impressed alone will at last excite b , c , &c. according to the proposition.

If A and B be vibrations impressed successively, then will the latter part of A , *viz.* that part which, according to the third and fourth propositions, remains, after the impression of the object ceases, be modified and altered by B , at the same time that it will a little modify and alter it, till at last it be quite overpowered by it, and end in it. It follows therefore, by a like method of reasoning, that the successive impression of A and B , sufficiently repeated, will so alter the medullary substance, as that when A is impressed alone, its latter part shall not be such as the sole impression of A requires, but lean towards B , and end in b at last. But B will not excite a in a retrograde order; since, by supposition, the latter part of B was not modified and altered by A , but by some other vibration, such as C or D . And as B , by being followed by C , may at last raise c ; so b , when raised by A , in the method here proposed, may be also sufficient to raise c ; inasmuch as the miniature c being a feeble motion, not stronger, perhaps, than the natural vibrations N , requires only to have its kind, place, and line of direction, determined by association, the heat and arterial pulsation conveying to it the requisite degree of strength. And thus A impressed alone will raise b , c , &c. in successive associations, as well as in synchronous ones, according to the proposition.

It seems also, that the influence of A may, in some degree, reach through B to C ; so that A of itself may have some effect to raise c , as well as by means of b . However, it is evident, that this chain must break off, at last, in long successions; and that sooner or later, according to the number and vigour of the repeated impressions. The power of miniature vibrations to raise other miniatures may, perhaps, be made clearer to mathematicians, by hinting, that the efficacy of any vibration to raise any other, is not in the simple ratio of its vividness, but as some power thereof less than unity; for thus b may raise c , a weaker vibration than b , c may raise d , &c. with more facility than if the efficacy was in the simple ratio of the vividness, and yet so that the series shall break off at last.

If the ninth proposition be allowed, we may prove this in somewhat a shorter and easier manner, as follows. Since the vibrations A and B are impressed together, they must, from the diffusion necessary to vibratory motions, run into one vibration; and consequently, after a number of impressions sufficiently

repeated, will leave a trace, or miniature, of themselves, as one vibration, which will recur every now and then, from slight causes. Much rather, therefore, may the part b of the compound miniature $a+b$ recur, when the part A of the compound original vibration $A+B$ is impressed.

And as the ninth proposition may be thus made to prove the present, so it ought to be acknowledged and remarked here, that unless the ninth be allowed, the present cannot be proved, or that the power of association is founded upon, and necessarily requires, the previous power of forming ideas, and miniature vibrations. For ideas, and miniature vibrations, must first be generated, according to the eighth and ninth propositions, before they can be associated, according to the tenth and this eleventh. But then (which is very remarkable) this power of forming ideas, and their corresponding miniature vibrations, does equally presuppose the power of association. For since all sensations and vibrations are infinitely divisible, in respect of time and place, they could not leave any traces or images of themselves, *i. e.* any ideas, or miniature vibrations, unless their infinitesimal parts did cohere together through joint impression, *i. e.* association. Thus, to mention a gross instance, we could have no proper idea of a horse, unless the particular ideas of the head, neck, body, legs, and tail, peculiar to this animal, stuck to each other in the fancy, from frequent joint impression. And, therefore, in dreams, where complex associations are much weakened, and various parcels of visible ideas, not joined in nature, start up together in the fancy, contiguous to each other, we often see monsters, chimeras, and combinations, which have never been actually presented.

Association seems also necessary to dispose the medullary substance to this or that miniature vibration, in succession, after the miniatures of a large number of original vibrations have been generated.

Nor does there seem to be any precise limit which can be set to this mutual dependence of the powers of generating miniatures, and of association upon each other: however they may both take place together, as the heart and brain are supposed to do, or both depend upon one simple principle; for it seems impossible, that they should imply one another *ad infinitum*. There is no greater difficulty here than in many other cases of mutual indefinite implication, known and allowed by all. Nay, one may almost deduce some presumption in favour of the hypothesis here produced, from this mutual indefinite implication of its parts so agreeable to the tenor of nature in other things. And it is certainly a presumption in its favour, that a less power of generating miniatures will be a foundation for a larger of association, and *vice versâ*, till, at last, the whole superstructure of ideas and associations observable in human life may, by proceeding upwards according to analysis, and downwards according

to synthesis, be built upon as small a foundation as we please. Thus we may observe, that neither does this eleventh proposition necessarily require the ninth, in its full extent, not *vice versá*, for their demonstration. The least miniatures, with the feeblest cohesions of their parts, will, by degrees, run into larger, with stronger cohesions, from the same principles; nor are there any visible limits to the influence and extent of these powers, supposing the natural faculties of the being under consideration sufficiently extended.

Let me add, that the generation of sensible ideas from sensations, and the power of raising them from association, when considered as faculties of the mind, are evident and unquestionable. Since therefore sensations are conveyed to the mind, by the efficiency of corporeal causes of the medullary substance, as is acknowledged by all physiologists and physicians, it seems to me, that the powers of generating ideas, and raising them by association, must also arise from corporeal causes, and consequently admit of an explication from the subtle influences of the small parts of matter upon each other, as soon as these are sufficiently understood; which is farther evinced from the manifest influences of material causes upon our ideas and associations, taken notice of under the second proposition. And as a vibratory motion is more suitable to the nature of sensation than any other species of motion, so does it seem also more suitable to the powers of generating ideas, and raising them by association. However, these powers are evident independently, as just now observed; so that the doctrine of association may be laid down as a certain foundation, and a clew to direct our future inquiries, whatever becomes of that of vibrations.

PROP. XII.—*Simple Ideas will run into complex ones, by Means of Association.*

IN order to explain and prove this proposition, it will be requisite to give some previous account of the manner in which simple ideas of sensation may be associated together.

Case 1. Let the sensation *A* be often associated with each of the sensations *B, C, D, &c.* *i. e.* at certain times with *B*, at certain other times with *C*, &c. it is evident, from the tenth proposition, that *A*, impressed alone, will, at last, raise *b, c, d, &c.* all together, *i. e.* associate them with one another, provided they belong to different regions of the medullary substance; for if any two, or more, belong to the same region, since they cannot exist together in their distinct forms, *A* will raise something intermediate between them.

Case 2. If the sensations *A, B, C, D, &c.* be associated together, according to various combinations of twos, or even threes, fours, &c. then will *A* raise *b, c, d, &c.* also *B* raise *a, c, d, &c.* as in case the first.

It may happen, indeed, in both cases, that A may raise a particular miniature, as b , preferably to any of the rest, from its being more associated with B , from the novelty of the impression of B , from a tendency in the medullary substance to favour b , &c. and in like manner, that b may raise c or d preferably to the rest. However, all this will be over-ruled, at last, by the recurrency of the associations; so that any one of the sensations will excite the ideas of the rest at the same instant, *i. e.* associate them together.

Case 3. Let A, B, C, D , &c. represent successive impressions, it follows from the tenth and eleventh propositions, that A will raise b, c, d , &c. B raise c, d , &c. And though the ideas do not, in this case, rise precisely at the same instant, yet they come nearer together than the sensations themselves did in their original impression; so that these ideas are associated almost synchronically at last, and successively from the first. The ideas come nearer to one another than the sensations, on account of their diminutive nature, by which all that appertains to them is contracted. And this seems to be as agreeable to observation as to theory.

Case 4. All compound impressions $A+B+C+D$, &c. after sufficient repetition leave compound miniatures $a+b+c+d$, &c. which recur every now and then from slight causes, as well such as depend on association, as some which are different from it. Now, in these recurrences of compound miniatures, the parts are farther associated, and approach perpetually nearer to each other, agreeably to what was just now observed; *i. e.* the association becomes perpetually more close and intimate.

Case 5. When the ideas a, b, c, d , &c. have been sufficiently associated in any one or more of the foregoing ways, if we suppose any single idea of these, a for instance, to be raised by the tendency of the medullary substance that way, by the association of A with a foreign sensation or idea X or x , &c. this idea a , thus raised, will frequently bring in all the rest, b, c, d , &c. and so associate all of them together still farther.

And upon the whole, it may appear to the reader, that the simple ideas of sensation must run into clusters and combinations, by association; and that each of these will, at last, coalesce into one complex idea, by the approach and commixture of the several compounding parts.

It appears also from observation, that many of our intellectual ideas, such as those that belong to the heads of beauty, honour, moral qualities, &c. are, in fact, thus composed of parts, which, by degrees, coalesce into one complex idea.

And as this coalescence of simple ideas into complex ones is thus evinced, both by the foregoing theory, and by observation, so it may be illustrated, and farther confirmed, by the similar coalescence of letters into syllables and words, in which association is likewise a chief instrument. I shall mention some of the

most remarkable particulars, relating to this coalescence of simple ideas into complex ones, in the following corollaries.

COR. I. If the number of simple ideas which compose the complex one be very great, it may happen, that the complex idea shall not appear to bear any relation to these its compounding parts, nor to the external senses upon which the original sensations, which gave birth to the compounding ideas, were impressed. The reason of this is, that each single idea is overpowered by the sum of all the rest, as soon as they are all intimately united together. Thus in very compound medicines the several tastes and flavours of the separate ingredients are lost and overpowered by the complex one of the whole mass: so that this has a taste and flavour of its own, which appears to be simple and original, and like that of a natural body. Thus also, white is vulgarly thought to be the simplest and most uncompounded of all colours, while yet it really arises from a certain proportion of the seven primary colours, with their several shades or degrees. And to resume the illustration above-mentioned, taken from language, it does not at all appear to persons ignorant of the arts of reading and writing, that the great variety of complex words of languages can be analysed up to a few simple sounds.

COR. II. One may hope, therefore, that, by pursuing and perfecting the doctrine of association, we may some time or other be enabled to analyse all that vast variety of complex ideas, which pass under the name of ideas of reflection, and intellectual ideas, into their simple compounding parts, *i. e.* into the simple ideas of sensation, of which they consist. This would be greatly analogous to the arts of writing, and resolving the colour of the sun's light, or natural bodies, into their primary constituent ones. The complex ideas which I here speak of, are generally excited by words, or visible objects; but they are also connected with other external impressions, and depend upon them, as upon symbols. In whatever way we consider them, the trains of them which are presented to the mind seem to depend upon the then present state of the body, the external impressions, and the remaining influence of prior impressions and associations taken together.

COR. III. It would afford great light and clearness to the art of logic, thus to determine the precise nature and composition of the ideas affixed to those words which have complex ideas, in a proper sense, *i. e.* which excite any combinations of simple ideas united intimately by association; also to explain, upon this foundation, the proper use of those words, which have no ideas. For there are many words which are mere substitutes for other words, and many which are only auxiliaries. Now it cannot be said, that either of these have ideas, properly so called. And though it may seem an infinite and impossible task, thus to analyse the significations and uses of words, yet, I suppose, this would not

be more difficult, with the present philological and philosophical helps to such a work, than the first making of dictionaries and grammars, in the infancy of philology. Perhaps it may not be amiss just to hint, in this place, that the four following classes comprise all the possible kinds into which words can be distinguished, agreeably to the plan here proposed :

1. Words which have ideas, but no definitions.
2. Words which have both ideas and definitions.
3. Words which have definitions, but no ideas.
4. Words which have neither ideas nor definitions.

It is quite manifest, that words seen or heard, can raise no ideas in the mind, or vibrations in the brain, distinct from their visible and audible impressions, except as far as they get new powers from associations, either incidental ones or arising from express design, as in definitions; and therefore, that all other ways of considering words, besides what is here suggested, are either false or imperfect.

COR. IV. As simple ideas run into complex ones by association, so complex ideas run into decomplex ones by the same. But here the varieties of the associations, which increase with the complexity, hinder particular ones from being so close and permanent, between the complex parts of decomplex ideas, as between the simple parts of complex ones: to which it is analogous, in languages, that the letters of words adhere closer together than the words of sentences, both in writing and speaking.

COR. V. The simple ideas of sensation are not all equally and uniformly concerned in forming complex and decomplex ideas; *i. e.* these do not result from all the possible combinations of twos, threes, fours, &c. of all the simple ideas; but, on the contrary, some simple ideas occur in the complex and decomplex ones much oftener than others; and the same holds of particular combinations by twos, threes, &c. and innumerable combinations never occur at all in real life, and, consequently, are never associated into complex or decomplex ideas. All which corresponds to what happens in real languages; some letters, and combinations of letters, occur much more frequently than others, and some combinations never occur at all.

COR. VI. As persons who speak the same language have, however, a different use and extent of words, so, though mankind, in all ages and nations, agree, in general, in their complex and decomplex ideas, yet there are many particular differences in them; and these differences are greater or less, according to the difference, or resemblance, in age, constitution, education, profession, country, age of the world, &c. *i. e.* in their impressions and associations.

COR. VII. When a variety of ideas are associated together, the visible idea, being more glaring and distinct than the rest, performs the office of a symbol to all the rest, suggests them,

and connects them together. In this it somewhat resembles the first letter of a word, or first word of a sentence, which are often made use of to bring all the rest to mind.

COR. VIII. When objects and ideas, with their most common combinations, have been often presented to the mind, a train of them, of a considerable length, may, by once occurring, leave such a trace, as to recur in imagination, and in miniature, in nearly the same order and proportion as in this single occurrence. For, since each of the particular impressions and ideas is familiar, there will want little more for their recurrency, than a few connecting links; and even these may be, in some measure, supplied by former similar instances. These considerations, when duly unfolded, seem to me sufficient to explain the chief phænomena of memory; and it will be easily seen from them, that the memory of adults, and masters in any science, ought to be much more ready and certain than that of children and novices, as it is found to be in fact.

COR. IX. When the pleasure or pain attending any sensations and ideas is great, all the associations belonging to them are much accelerated and strengthened. For the violent vibrations excited in such cases, soon overrule the natural vibrations, and leave in the brain a strong tendency to themselves, from a few impressions. The associations will therefore be cemented sooner and stronger than in common cases; which is found agreeable to the fact.

COR. X. As many words have complex ideas annexed to them, so sentences, which are collections of words, have collections of complex ideas, *i. e.* have decomplex ideas. And it happens, in most cases, that the decomplex idea belonging to any sentence is not compounded merely of the complex ideas belonging to the words of it; but that there are also many variations, some oppositions, and numberless additions. Thus, propositions, in particular, excite, as soon as heard, assent or dissent; which assent and dissent consist chiefly of additional complex ideas, not included in the terms of the proposition. And it would be of the greatest use, both in the sciences and in common life, thoroughly to analyse the matter, to shew in what manner, and by what steps, *i. e.* by what impressions and associations, our assent and dissent, both in scientific and moral subjects, is formed.

PROP. XIII. *When simple Ideas run into a complex one, according to the foregoing Proposition, we are to suppose, that the simple miniature Vibrations corresponding to those simple Ideas, run in like manner, into a complex miniature Vibration, corresponding to the resulting complex Idea.*

THIS proposition is analogous to the ninth and eleventh, and may be deduced from the last, as they are from the eighth and

tenth respectively. It is also an evidence and illustration of the second; shewing, not only that the state of the medullary substance is changed, according to the several natures of the ideas which are presented to the mind; but also shewing, in general, of what kind this change is, and in what manner it is effected.

PROP. XIV. *It is reasonable to think, that some of the complex Vibrations attending upon complex Ideas, according to the last Proposition, may be as vivid as any of the sensory Vibrations excited by the direct Action of Objects.*

FOR these complex vibrations may consist of so many parts co-existent and successive, and these parts may so alter and exalt one another, as that the resulting agitations in the medullary substance may no longer be miniature vibrations, but vivid ones equal to those excited by objects impressed on the senses. This process may be farther favoured by a mixture of vivid real impressions among the ideas, by the irritability of the medullary substance, by a previous disposition to the vibrations to be excited, &c.

COR. I. When the complex miniature vibrations are thus exalted in degree, we are to conceive, that the corresponding complex ideas are proportionally exalted, and so pass into intellectual affections and passions. We are therefore to deduce the origin of the intellectual pleasures and pains, which are the objects of these affections and passions, from the source here laid open.

COR. II. Since the present proposition unfolds the nature of affections and will, in the same manner, and from the same principles, as the twelfth does that of ideas, intellect, memory, and fancy; it follows, that all these are of the same original and consideration, and differ only in degree, or some accidental circumstances. They are all deducible from the external impressions made upon the senses, the vestiges or ideas of these, and their mutual connexions by means of association, taken together and operating on one another.

COR. III. It follows also from this proposition, that the intellectual pleasures and pains may be greater, equal, or less, than the sensible ones, according as each person unites more or fewer, more vivid or more languid, miniature vibrations in the formation of his intellectual pleasures and pains, &c.

COR. IV. It is evident, that all the vibrations which belong to ideas, and intellectual affections, must reside in the brain, or even in the most internal parts of it, not in the spinal marrow or nerves. The brain is therefore the seat of the rational soul, *i. e.* of the soul, as far as it is influenced by reasons and moral motives, even though we should admit, that the spinal marrow and nerves, are, in part, the sensorium, or the seat of the sensitive soul; which is some argument, that this ought not to be

admitted, but that the sensorium, in men at least, ought to be placed in the internal parts of the brain.

COR. V. It is of the utmost consequence to morality and religion, that the affections and passions should be analysed into their simple compounding parts, by reversing the steps of the associations which concur to form them. For thus we may learn how to cherish and improve good ones, check and root out such as are mischievous and immoral, and how suit our manner of life, in some tolerable measure, to our intellectual and religious wants. And as this holds, in respect of persons of all ages, so it is particularly true, and worthy of consideration, in respect of children and youth. The world is, indeed, sufficiently stocked with general precepts for this purpose, grounded on experience; and whosoever will follow these faithfully, may expect good general success. However, the doctrine of association, when traced up to the first rudiments of understanding and affection, unfolds such a scene as cannot fail both to instruct and alarm all such as have any degree of interested concern for themselves, or of a benevolent one for others. It ought to be added here, that the doctrine of association explains also the rise and progress of those voluntary and semi-voluntary powers, which we exert over our ideas, affections, and bodily motions (as I shall shew hereafter, Prop. XXI.) and by doing this, teaches us how to regulate and improve these powers.

COR. VI. If beings of the same nature, but whose affections and passions are, at present, in different proportions to each other, be exposed for an indefinite time to the same impressions and associations, all their particular differences will, at last, be overruled, and they will become perfectly similar, or even equal. They may also be made perfectly similar, in a finite time, by a proper adjustment of the impressions and associations.

COR. VII. Our original bodily make, and the impressions and associations which affect us in passing through life, are so much alike, and yet not the same, that there must be both a great general resemblance amongst mankind, in respect to their intellectual affections, and also many particular differences.

COR. VIII. Some degree of spirituality is the necessary consequence of passing through life. The sensible pleasures and pains must be transferred by association more and more every day, upon things that afford neither sensible pleasure nor sensible pain in themselves, and so beget the intellectual pleasures and pains.

COR. IX. Let the letters *a, b, c, d, e*, &c. represent the sensible pleasures; *x, y*, and *z*, the sensible pains, supposed to be only three in number; and let us suppose all these, both pleasures and pains, to be equal to one another: If now the ideas of these sensible pleasures and pains be associated together, according to all the possible varieties, in order to form intellectual pleasures and pains, it is plain, that pleasure must prevail in all the

combinations of seven or more letters; and also, that when the several parts of these complex pleasures are sufficiently united by association, the pains which enter their composition will no longer be distinguished separately, but the resulting mixed and complex pleasures appear to be pure and simple ones, equal in quantity to the excess of pleasure above pain, in each combination. Thus association would convert a state in which pleasure and pain were both perceived by turns, into one in which pure pleasure alone would be perceived; at least, would cause the beings who were under its influence to an indefinite degree, to approach to this last state nearer than by any definite difference. Or, in other words, association, under the supposition of this corollary, has a tendency to reduce the state of those who have eaten of the tree of the knowledge of good and evil, back again to a paradisiacal one. Now, though the circumstances of mankind are not the same with those supposed in this corollary, yet they bear a remarkable resemblance thereto, during that part of our existence which is exposed to our observation. For our sensible pleasures are far more numerous than our sensible pains; and though the pains be, in general, greater than the pleasures, yet the sum total of these seems to be greater than that of those; whence the remainder, after the destruction of the pains by the opposite and equal pleasures, will be pure pleasure.

COR. X. The intellectual pleasures and pains are as real as the sensible ones, being, as we have seen, nothing but the sensible ones variously mixed and compounded together. The intellectual pleasures and pains are also all equally of a factitious and acquired nature. We must therefore estimate all our pleasures equally, by their magnitude, permanency, and tendency to procure others; and our pains in like manner.

COR. XI. The sensible pleasures and pains have a greater tendency to destroy the body, than the intellectual ones; for they are of a particular local nature, and so bear hard upon the organs which convey them. But the destruction of any one considerable part of the body is the destruction of the whole, from the sympathy of the parts; whereas the intellectual pleasures and pains, being collected from all quarters, do not much injure any organ particularly, but rather bring on an equable gradual decay of the whole medullary substance, and all the parts thereon depending.

COR. XII. This proposition, and its corollaries, afford some pleasing presumptions; such are, that we have a power of suiting our frame of mind to our circumstances, of correcting what is amiss, and improving what is right: that our ultimate happiness appears to be of a spiritual, not corporeal nature; and therefore that death, or the shaking off the gross body, may not stop our progress, but rather render us more expedite in the pursuit of our true end: that association tends to make us all ultimately similar; so that if one be happy, all must: and lastly, that the

same association may also be shewn to contribute to introduce pure ultimate spiritual happiness, in all, by a direct argument, as well as by the just-mentioned indirect one.

SECT. III.

OF MUSCULAR MOTION, AND ITS TWO KINDS, AUTOMATIC AND VOLUNTARY; AND OF THE USE OF THE DOCTRINES OF VIBRATIONS AND ASSOCIATION, FOR EXPLAINING THESE RESPECTIVELY.

PROP. XV.—*It is probable, that muscular Motion is performed in the same general Manner as Sensation, and the Perception of Ideas.*

FOR first, Sensation, the perception of ideas, and a locomotive faculty, *i. e.* muscular motion, are the three most eminent marks of distinction between the animal and vegetable world: therefore, since it is already found that the two first are performed by the same means, *i. e.* vibrations, there is some presumption that the last will not require a different one.

Secondly, Of the two sorts of motion, *viz.* automatic and voluntary, the first depends upon sensation, the last upon ideas, as I shall shew particularly hereafter, and may appear, in general, to any one, upon a slight attention; whence it follows, that sensation, and automatic motion, must be performed in the same general manner, also the perception of ideas, and voluntary motion: and therefore, since sensation and perception, the two antecedents, agree in their causes, automatic and voluntary motion, the two consequents, *i. e.* all the four, must likewise.

Thirdly, It appears from the first and second propositions, that the white medullary substance is the common instrument of sensation, ideas, and motion; and by the fifth, that this substance is uniform and continuous every where. Hence it follows, that the subtle motions excited in the sensory nerves and medullary substance of the brain, during sensation and intellectual perception, must, of whatever kind they be, pass into the motory nerves; and when they are arrived there, it is probable that they must cause the contraction of the muscles, both because otherwise their arrival at the motory nerves would be superfluous, and because some such subtle motions are required for this purpose.

COR. I. All arguments, therefore, which prove the performance of sensation and intellectual perception, by means of vibrations of the small medullary particles, must infer, that muscular motion

is performed by vibrations also. And conversely, if vibrations can be shown to take place in muscular motion, they must also be instrumental in sensation and intellectual perception.

COR. II. There are certain experiments and observations which favour the supposition of the performance of muscular motion by subtle agitations in the small particles of the muscular fibres, *i. e.* by vibratory motions. It follows therefore, that these experiments and observations are some additional evidence for the existence of sensory and ideal vibrations, as above explained. Such are, that the motion of the heart, and of other muscles, may be renewed in dying animals, and those that are newly dead, by heat, injection of a fluid, and punctures, it being easy to be conceived, that the two last causes should put the particles of the fibres into agitations for a short time, *i. e.* till they can recover their equilibrium, by altering their distances, and mutual actions: and the first cause, *i. e.* heat, is, by the common consent of all, judged to consist in, and to cause, subtle vibratory motions. It is also difficult to assign any other action which these causes can have. In like manner, the alternate contractions and relaxations of the hearts of frogs, vipers, and some other animals, which continue for long spaces of time after these have been entirely separated from their bodies, seem utterly inexplicable upon any of the common suppositions, but follow easily from the doctrine of vibrations, as it is applied to muscular motion, in the two next propositions.

COR. III. Since the same motion which occasions sensation, and intellectual perception, passes through the seats of these into the motory nerves, in order to excite there the automatic and voluntary motions, thus pervading the whole medullary substance, in various ways, according to the variety of the circumstances, but in all with the greatest precision and exactness; it follows, that this must be a vibratory one, and that of the most subtle kind. For the same excess of softness, which renders the medullary substance totally inelastic as to sense, and consequently unfit for the grosser vibrations of the particles of the first or largest order (by the vibrations of which, in sonorous bodies, it seems that sound is excited in the air), may render it more susceptible of vibrations, in the particles of the second, third, &c. orders; and if we suppose a proper ultimate structure in the several parts of the medullary substance, these vibrations may be conveyed with all that precision and variety which the phænomena require. And unless we do suppose some such subtle vibrations as these, it will be extremely difficult to conceive, how so soft a pulp as the medullary substance is, should be the common instrument of sensation, thought, and motion; which yet all physicians and philosophers must allow, according to the first and second propositions. If we set aside subtle vibratory motions, the impulse of the objects of sense can communicate nothing, as it seems, to so soft a

substance, but an uniform pressure, susceptible of few or no modifications, and consequently highly unsuitable to the great variety of the phænomena that are to be solved by it. This argument therefore tends to shew, that sensation, thought, and motion, must all be performed by vibrations.

PROP. XVI.—*The Phænomena of muscular Contraction appear to be sufficiently agreeable to the Doctrine of Vibrations.*

IN order to shew this, let us make the following suppositions :
First, That vibrations descend along the motory nerves, *i. e.* the nerves which go to the muscles, in some such manner as sound runs along the surfaces of rivers, or an electrical virtue along hempen strings.

Secondly, that these vibrations, when they arrive at the muscular fibres, are communicated to them, so that the small particles of these fibres shall be agitated with like vibrations.

Thirdly, That the vibrations thus excited in the fibres, put into action an attractive virtue, perhaps of the electrical kind, which lies concealed in the particles of the fibres, or in the blood-globules, or both. That the blood-globules of animals are electrical, may be conjectured from the electricity of those of the muscle-shell fish, observed by Dr. Hales; and that the red blood has a principal share in muscular contraction is highly probable, from the red colour of all the great muscles of the body, and from the weakness of all young animals, and of such as want a due share of red blood. At the same time, it appears from exanguinous and transparent animals, that pale fibres, and colourless fluids, have all the necessary requisites for muscular contraction, in certain degrees.

Fourthly, We must now suppose, in consequence of the three foregoing suppositions, that each muscular fibre, and consequently the whole muscle, is made shorter by this increase of attraction in its particles; whilst yet their approach to each other is so small, as that the whole bulk of the muscle is but little diminished; for though the length of the muscle is lessened, its other dimensions are increased.

Fifthly, If we suppose the small ultimate fibres of the muscles to bend alternately to the right and left as an eel does, at exceedingly short intervals, agreeably to Dr. Lower, this may somewhat assist us to conceive in what manner a muscle may be shortened, and yet so increased in breadth and thickness, as to remain of nearly the same dimensions. For if these flexures be increased by the increase of the attraction of the parts, the whole muscle will become shorter and thicker, as it is found to be in contraction; and conversely, when the flexures are drawn out, the muscle will be longer and thinner, *i. e.* in a state of relaxation. The small wrinkles which have been observed in the muscular fibres, by Leeuwenhoek, and others, the wavings and

curls which frequently appear to the eye in muscles, after boiling or roasting, and the rhomboidal pinnulæ taken notice of by Dr. Hales in the abdominal muscles of a living frog, when under contraction, all seem to favour this fifth supposition.

Dr. Pemberton conjectures, that the cause of the contraction of muscular fibres is no other than the common cause of the cohesion of the small particles of the muscular fibres increased. And this seems very probable; for the muscles are hard during contraction, soft during relaxation; and hardness and softness are evidently nothing but variations in the cohesion of the small particles of bodies. Neither is this conjecture at all repugnant to the supposition of an electrical attraction above made, or to the doctrine of vibrations; for electricity may reach to small distances, without being excited by friction, and flow from the same principle as the cohesion of bodies, as Sir Isaac Newton has observed. It may therefore be the general cause of cohesion, and may be excited in the muscular fibres in an extraordinary degree, whenever extraordinary vibrations are communicated to them. Or, if we suppose the cause of cohesion to be something distinct from electricity, it may, however, be increased by vibrations of the small cohering particles.

PROP. XVII.—*That Propensity to alternate Contraction and Relaxation, which is observed in almost all the Muscles of the Body, admits of a Solution from the Doctrine of Vibrations.*

FOR, when the fibres are in a state of contraction, they are hard; and this hardness, if it be supposed to extend to the small particles (which is no unreasonable supposition), must render the particles of these particles, *i. e.* the particles supposed in these propositions to be agitated with vibrations, indisposed to receive these vibrations; but the free admission of these vibrations is by supposition the cause which excites the attractions of the particles, and the consequent contraction of the muscle. It follows therefore, that the hardness which impedes these vibrations, must also lessen the attraction and contraction; or, in other words, that the contraction of a muscle, when carried to a certain degree, must check itself, and bring on a relaxation, after a time sufficient for the proper causes to take effect.

In like manner, when a muscle is relaxed, the vibrations which descend along the motory nerves pass freely into the muscular fibres, increase the attractions of the particles, and bring on the opposite state, that of contraction; and so on alternately.

The fibres of the relaxed muscle may also be considered as under a state of distention to a certain degree, and, consequently, as liable to an increase of vibrations upon this account. To which we may farther add, that since vibrations are hindered from passing into the contracted muscle, in the manner just now explained, they will pass with greater force into the relaxed

one, from the place of the common derivation of their nerves, wherever there are antagonist muscles that derive nerves from the same trunk, as in the limbs, and muscles of respiration.

COR. It appears from this method of considering the contractions and relaxations of muscles, that there is a certain degree of hardness or contraction in muscular fibres, which may be supposed just to balance each degree of force with which vibrations descend into the muscular fibres; and that while this equilibrium subsists, the contraction can neither be increased nor abated.

PROP. XVIII.—*The Vibrations, of which an Account has been given in this Chapter, may be supposed to afford a sufficient Supply of motory Vibrations, for the purpose of contracting the Muscles.*

IN order to make this appear, it will be proper to distinguish the motory vibrations, or those which descend along the nerves of the muscles into their fibres, into the five following classes:

First, then, We are to conceive, that those sensory vibrations which are excited in the external organs, and ascend towards the brain, when they arrive, in their ascent, at the origins of motory nerves, as they arise from the same common trunk, plexus, or ganglion, with the sensory ones affected, detach a part of themselves at each of these origins down the motory nerves; which part, by agitating the small particles of the muscular fibres, in the manner explained in the sixteenth proposition, excites them to contraction.

Secondly, The remainder of the sensory vibrations, which arrives at the brain, not being detached down the motory nerves in its ascent thither, must be diffused over the whole medullary substance. It will therefore descend from the brain into the whole system of motory nerves, and excite some feeble vibrations, at least, in them. The same may be observed of ideal vibrations, generated in the brain by association; these must pervade the whole medullary substance, and, consequently, affect all the motory nerves in some degree.

Thirdly, The heat of the blood and pulsation of the arteries, which pass through the medullary substance, must always excite, or keep up, some vibrations in it; and these must always descend into the whole system of muscles. And I apprehend, that, from these two last sources taken together, we may account for that moderate degree of contraction, or tendency thereto, which is observable in all the muscles, at least in all those of healthy adults, during vigilance.

Fourthly, When vivid vibrations are excited in membranes of an uniform texture, by a stimulus of any kind, they seem to run over the whole extent of such membranes, and by this means to have a great influence in contracting all the muscles that lie near any part of this membrane, though they be remote from the

place of the stimulus. The manner in which this is effected, I conceive to be as follows:—The repeated or continued action of the stimulus diffuses vibrations from the place of its action over the whole membrane, which, by their reciprocal influences, become equal, or nearly so, in every part of it, and are, at last, so exalted, as to contract every part. As soon as this contraction takes place, the vibrations in its small particles must cease, for reasons given above. They will therefore be propagated almost instantaneously over the neighbouring muscles, from the nervous communications between the membrane and the neighbouring muscles; by which all changes made in the nerves of the membrane must affect those of the neighbouring muscles. As therefore during the vivid vibrations of the particles of the membrane, we must suppose some to be propagated into the neighbouring muscles, agreeably to the first article of this proposition, so upon their sudden cessation, such a change may reasonably be supposed, in the communicating nervous fibrils, as shall agitate the æther contained in them with much more vivid vibrations than before; and these vibrations must now pass into the muscles alone, since the contraction of the membrane hinders them from returning into it. I shall hereafter produce several examples of this process, in detail. It may suffice, at present, just to mention the action of sneezing, and to desire the reader to compare this action, in a cursory way, with the foregoing account.

Fifthly, I have, in the last article, shewn how a cessation of vibrations in the particles of a membrane may increase those in the neighbouring muscles. But it seems also, that a cessation of vibrations in any other considerable part of the body, from whatever cause it proceeds, has a like tendency; and that this tendency is deducible from the change made in the nerves of the part affected, and thence propagated into the communicating branches, or even into the whole medullary substance. The yawnings and stretchings of persons disposed to sleep, the convulsive respiration of those that are just fallen asleep, and the convulsive motions which attend the extinction of the senses in epileptic fits, and the near approaches of death, may be derived, perhaps, in part, from this source, in part from some of the foregoing.

PROP. XIX.—*The automatic Motion seems to admit of a commodious Explanation from the three last Propositions taken together.*

THE particular detail of this obscure and intricate matter will be attempted in the proper places of the next chapter, which will contain the application of the general positions concerning sensation and motion, in this, to each of the most remarkable phænomena, considered separately. I will, however, present the reader here with a short sketch, to enable him to form some notion of the manner and plausibility of the attempt.

The ordinary motions of the heart appear to arise from the second and third classes of motory vibrations, mentioned in the last proposition; and it is remarkable, that its motions are found to be, in general, and *cæteris paribus*, stronger or weaker, as the sum total of these two classes is greater or less. The systole and diastole succeed each other, from the causes assigned in the seventeenth proposition. We are to conceive, however, that both the influx of the venal blood into the ventricles, and of the arterial into the coronary vessels, have a considerable share in bringing on the systole, in the way of distention and irritation.

May we not conjecture, from that experiment of Dr. Hook's, in which he kept a dog alive, by a mere continued stream of fresh air passing through the lungs, without any such alternate motion of the chest as takes place in common respiration, that one principal use of the air, which is an electric *per se*, in respiration, is to restore to the blood, as it passes through the lungs, that electricity which it has lost in circulating through the body? For, upon this supposition, the blood which arrives at the left ventricle, will, in cessations of respiration, and also where foul air is respired, want its due electricity; whence, according to Prop. XVI. the muscles, and especially the heart, will want one of the principal requisites for contraction. However, convulsive motions may ensue after a syncope, from the fifth class of motory vibrations.

It is remarkable here, that the hearts of frogs, vipers, and several other such animals, as can live in great degrees of cold, and without respiration, continue to beat, as has been taken notice of above, for a long time after they are taken out of their bodies. We must therefore suppose, that the fibres of their hearts, and the blood globules which remain in them, are endued with an electric, or other attractive virtue, of a more durable kind than the fibres and blood globules of the more perfect animals; also, that this virtue may be put into action by a less degree of heat. All which is very agreeable to the other circumstances of their economy.

Respiration and crying are excited in the new-born child from the cold handling of the midwife, and other vivid sensations impressed immediately upon its coming into the world. These vivid sensations put the whole system of muscles, or at least those of the trunk and larynx, into action at once, as far as their mutual antagonism will permit, the stronger set of conspiring muscles overpowering the weaker for a certain short time, and then, after their force is exhausted, according to Prop. XVII. giving way for a shorter time to the weaker. But this alternate action of the muscles of the trunk and larynx will be an imperfect kind of respiration, with crying, as may be easily seen from the disposition of the muscles. Respiration is afterwards kept up, partly by the propensity of the muscles to alternate action, explained Prop. XVII.; partly, perhaps, by the power of habit, *i. e.* association;

partly by the renewal of vivid impressions; and partly, as it seems, by vibrations excited in the pleura and peritonæum, and thence communicated to the diaphragm, and to the muscles of the breast and belly.

That the last cause has a real efficacy, may appear from the following instance:—Let respiration be supposed to be at a stand for a small time, on account of the person's running, or exerting an act of great strength. It is evident, that the blood will both be accumulated in the lungs, and heated there, during this interruption of respiration, since respiration both ventilates the blood, and promotes its motion through the lungs. The external membrane of the lungs will therefore be both distended and heated, *i. e.* will have an increase of vibrations communicated to it. But this membrane is continuous to the pleura, and, indeed, is the same membrane with it. An increase of vibrations will therefore be communicated to the pleura, and consequently to the diaphragm, and muscles of the breast, which it invests.

The peristaltic motion of the intestines is, in part, to be deduced from the second and third classes of motory vibrations, in the same manner as the motion of the heart, since that motion, like this, returns at intervals incessantly. And there is reason to believe, that vigorous vibrations, either of the sensory or ideal kind, impart an extraordinary degree of activity to the stomach and bowels. However, they derive also a great part of their motions, probably the major part, from the impressions which the aliment, bile, and fæces, make upon the villous coat; the vibrations excited by these impressions both running directly into the muscular coat, for the purpose of contracting that part which adjoins to the seat of impression, and also running upwards and downwards along the villous coat, so as to exert some efficacy at a distance from this seat.

It is very remarkable, that the pale fibres of the intestines, in men, and many other animals, preserve their power of alternate contraction and relaxation for a considerable time after death, whereas the red fleshy muscles of the same animals lose theirs soon after the effusion of their blood. It is a phænomenon of a like kind with this, that the whole muscular system of some animals that are exanguious, or nearly so, retain their activity for a considerable time after these animals are cut into pieces. And both may serve to intimate that the electricity, or other attractive virtue, of pale fibres and fluids, at the same time that it is feebler than that of red ones, is however, of a more durable kind, and, as was observed above of the hearts of frogs and vipers, capable of being put into action by a less degree of heat.

The actions of sneezing, swallowing, coughing, hiccoughing, vomiting, and expelling the fæces and urine, with others of a like nature, are to be deduced from the first and fourth classes of motory vibrations; *i. e.* either from those vibrations which first ascend up the sensory nerves, and then are detached down the

motory nerves, which communicate with these by some common trunk, plexus, or ganglion, or else from those vibrations that run along the surfaces of uniform membranes, and so affect all the muscles which lie contiguous to any part of these membranes. It is a strong argument in favour of the hypothesis here delivered, that all the above-mentioned motions arise in the neighbourhood of vivid sensations, increase when they increase, and languish when they languish.

In examining this hypothesis by the actions of sneezing, swallowing, and coughing, regard must be had to the nose, uvula, and epiglottis, respectively, as being extreme and pointed parts, and consequently liable to be affected with extraordinary vibrations, agreeably to the ninth phenomenon of the sixth proposition.

In like manner, the numerous plexuses and ganglions of the eight pair of nerves and intercostal nerve must have great influence in the motions and functions of the parts contained in the thorax and belly.

As the motory vibrations of the second and third classes are of a gentle kind, for the most part, and descend constantly into the whole system of the muscles, it may be expected, that young children should move all their limbs at times, with some irregular kind of succession, from this cause. And this seems to be the fact. Strong contractions of the limbs are often excited by frictions, gripes, and other vivid sensations; but then the motory vibrations here are those of the first and fourth classes. General convulsions, from acidities, and other irritations in the bowels, seem to be excited in the same way, the intercostal nerve serving to communicate the vibrations with more readiness to the muscles of the trunk and limbs.

It appears to me also, that the intercostal nerve, which makes those of each side a separate system, as it were, has some share in determining hemiplegias to one side. In like manner, the great brachial and crural ganglions make all the nerves of the same limb sympathize with one another.

Whether the nerves of the same names throughout the body have not some sympathetic influences over each other, may be doubted. If those of the right side arise from the left part of the brain, and *vice versá*, which seems to be the opinion of the best anatomists, then one would imagine, that the homonymous nerves of the right and left sides must, in crossing over, lie somewhere contiguous to each other, and so impart vibrations to each other. And there seem to be some facts from whence this may be inferred; but we cannot expect to be able to distinguish, with certainty, so feeble an influence, amidst so many others that are far stronger.

Yawning and stretching may, perhaps, when considered in all their circumstances, take in all the five classes of motory vibrations. When they happen in the attacks of fever-fits, and other

morbid cases, the first seems to be owing to pretty sudden and strong contractions in the membrane of the mouth, fauces, aspera arteria, and œsophagus; the last to contractions in the whole skin.

As the bowels derive their peristaltic motion, in part, from the second and third classes; so it seems that the secretory and excretory vessels of the glands must be constantly agitated with a like motion, from the same causes, performing their ordinary secretions and excretions thereby. Their extraordinary ones are generally owing to irritations in the membranes, in which the mouths of their excretory vessels lie. And this agrees remarkably with the doctrine of vibrations. For the vivid vibrations excited in the membranes by the irritating cause must diffuse themselves every way; and when they come to the mouths of the excretory vessels, penetrate them, and, by passing up into the vessels, both excretory and secretory, greatly increase their peristaltic motion, and, by consequence, their secretions and excretions. All this seems equally to hold, in respect of the exhaling and absorbing vessels dispersed throughout the body.

The external motions of the eyes in young children are probably owing, in part at least, to the immediate action of light upon the tendinous expansions of the four strait muscles, and particularly upon those of the *adducens* and *abducens*. But the light which passes through the pupil seems also to have some share, as will be shewn hereafter. As to the internal motions, it appears, that the light which falls upon the *cornea* and *uvea* must excite the greater and lesser rings to contraction, in proportion to its strength; and, consequently, prepare the eye to see distinctly, at different distances, in the manner explained by Dr. Jurin. The hypothesis of this proposition does therefore give and receive light from his ingenious theory of this matter.

The two muscles which relax the *membrana tympani*, are much more exposed to the air than the *musculus internus*, or the *musculus stapedis*. When therefore the air is agitated with strong vibrations, as in loud sounds, it will excite the first-named muscles to action, and consequently relax the *membrana tympani*, as it ought to do. For what reasons the last-named muscles are contracted in feeble sounds, is a question of a more difficult nature, as is the parallel one in the eye, viz. why the radiated fibres of the *uvea* are contracted in small degrees of light, so as then to dilate the pupil.

The reader is desired to take notice, that, in all the instances of this proposition, I consider the motions as merely automatic. Their voluntary and semi-voluntary state will be accounted for in the two next propositions.

PROP. XX.—*All that has been delivered above, concerning the Derivation of ideal Vibratiuncles from sensory Vibrations, and concerning their Associations, may be fitly applied to motory Vibrations and Vibratiuncles.*

THIS proposition is the immediate consequence of admitting the doctrines of vibrations and association, in the manner in which they have been asserted in the foregoing propositions. It contains the theory of the voluntary and semi-voluntary motions; to facilitate the application of which theory in the next proposition, I shall deliver the principal cases of this, in the following corollaries.

COR. I. The motory vibrations of the five classes mentioned Prop. XVIII. will generate a propensity to corresponding motory vibratiuncles.

COR. II. These motory vibratiuncles will affect the brain, as well as the motory nerves along which they descend; and, indeed, their descent along the motory nerves will be principally owing to their being first excited in the brain. This is sufficiently evident in the motory vibratiuncles which are derived from the motory vibrations of the second and third classes. As to the motory vibrations of the other classes, it is evident, that the brain is strongly affected by the sensory vibrations which give birth to them, and consequently, that a proportional affection of the brain must take place in the motory vibratiuncles derived from them.

COR. III. The motory vibratiuncles will cohere to one another, by associations both synchronous and successive. Hence the simple parts, of which complex and decomplex motions are compounded, may cohere closely, and succeed readily to each other.

COR. IV. The motory vibratiuncles will also cohere to ideal ones by association. Common ideas may therefore excite motory vibratiuncles, and consequently be able to contract the muscles, provided the active powers lodged in their fibres and blood globules be sufficiently exalted for this purpose.

COR. V. If we suppose the ideal vibratiuncles to be so much increased from the causes mentioned, Prop. XIV. as to be equal in strength to the usual sensory vibrations, the motory vibratiuncles connected with them by association must be supposed to be increased proportionably. Hence ideas may occasion muscular motions of the same strength with the automatic motions.

COR. VI. The third and last connexion of the motory vibratiuncles is that with sensory vibrations, foreign to them, *i. e.* such as had no share in generating the motory vibratiuncles under consideration. Particular motions of the body may therefore by association be made to depend upon sensations, with which they have no natural and original connexion.

COR. I. As muscular motion has three connexions deducible

from association, *viz.* those mentioned in the third, fourth, and sixth corollaries, so the sensations and ideas have the same three connexions. Hence the whole doctrine of association may be comprised in the following theorem, *viz.*

If any sensation A, idea B, or muscular motion C, be associated for a sufficient number of times with any other sensation D, idea E, or muscular motion F, it will, at last, excite d, the simple idea belonging to the sensation D, the very idea E, or the very muscular motion F.

The reader will observe, that association cannot excite the real sensation *D*, because the impression of the sensible object is necessary for this purpose. However, in certain morbid cases, the idea is magnified so as to equal, or even overpower, sensible impressions.

PROP. XXI. *The voluntary and semi-voluntary Motions are deducible from Association, in the Manner laid down in the last Proposition.*

IN order to verify this proposition, it is necessary to inquire, what connexions each automatic motion has gained by association with other motions, with ideas, or with foreign sensations, according to the third, fourth, and sixth corollaries of the last proposition, so as to depend upon them, *i. e.* so as to be excited no longer, in the automatic manner described in the nineteenth proposition, but merely by the previous introduction of the associated motion, idea, or sensation. If it follow that idea, or state of mind (*i. e.* set of compound vibratiuncles), which we term the will, directly, and without our perceiving the intervention of any other idea, or of any sensation or motion, it may be called voluntary, in the highest sense of this word. If the intervention of other ideas, or of sensations and motions (all which we are to suppose to follow the will directly), be necessary, it is imperfectly voluntary; yet still it will be called voluntary, in the language of mankind, if it follow certainly and readily upon the intervention of a single sensation, idea, or motion, excited by the power of the will: but if more than one of these be required, or if the motion do not follow with certainty and facility, it is to be esteemed less and less voluntary, semi-voluntary, or scarce voluntary at all, agreeably to the circumstances. Now, if it be found, upon a careful and impartial inquiry, that the motions which occur every day in common life, and which follow the idea called the will, immediately or mediately, perfectly or imperfectly, do this, in proportion to the number and degree of strength in the associations, this will be sufficient authority for ascribing all which we call voluntary in actions to association, agreeably to the purport of this proposition. And this, I think, may be verified from facts, as far as it is reasonable to expect, in a subject of inquiry so novel and intricate.

In the same manner as any action may be rendered voluntary, the cessation from any, or a forcible restraint upon any, may be also, *viz.* by proper associations with the feeble vibrations in which inactivity consists, or with the strong action of the antagonist muscles.

After the actions, which are most perfectly voluntary, have been rendered so by one set of associations, they may, by another, be made to depend upon the most diminutive sensations, ideas, and motions, such as the mind scarce regards, or is conscious of; and which therefore it can scarce recollect the moment after the action is over. Hence it follows, that association not only converts automatic actions into voluntary, but voluntary ones into automatic. For these actions, of which the mind is scarce conscious, and which follow mechanically, as it were, some precedent diminutive sensation, idea or motion, and without any effort of the mind, are rather to be ascribed to the body than the mind, *i. e.* are to be referred to the head of automatic motions. I shall call them automatic motions of the secondary kind, to distinguish them both from those which are originally automatic, and from the voluntary ones; and shall now give a few instances of this double transmutation of motions, *viz.* of automatic into voluntary, and of voluntary into automatic.

The fingers of young children bend upon almost every impression which is made upon the palm of the hand, thus performing the action of grasping in the original automatic manner. After a sufficient repetition of the motory vibrations which concur in this action, their vibratiuncles are generated, and associated strongly with other vibrations or vibratiuncles, the most common of which, I suppose, are those excited by the sight of a favourite plaything which the child uses to grasp, and hold in his hand. He ought, therefore, according to the doctrine of association, to perform and repeat the action of grasping, upon having such a plaything presented to his sight. But it is a known fact, that children do this. By pursuing the same method of reasoning, we may see how, after a sufficient repetition of the proper associations, the sound of the words *grasp, take hold, &c.* the sight of the nurse's hand in a state of contraction, the idea of a hand, and particularly of the child's own hand, in that state, and innumerable other associated circumstances, *i. e.* sensations, ideas, and motions, will put the child upon grasping, till, at last, that idea, or state of mind which we may call the will to grasp, is generated and sufficiently associated with the action to produce it instantaneously. It is therefore perfectly voluntary in this case; and by the innumerable repetitions of it in this perfectly voluntary state, it comes, at last, to obtain a sufficient connexion with so many diminutive sensations, ideas, and motions, as to follow them in the same manner, as originally automatic actions do the corresponding sensations, and consequently to be automatic secondarily. And in the same manner, may all the actions

performed with the hands be explained, all those that are very familiar in life passing from the original automatic state through the several degrees of voluntariness till they become perfectly voluntary, and then repassing through the same degrees in an inverted order, till they become secondarily automatic on many occasions, though still perfectly voluntary on some, *viz.* whensoever an express act of the will is exerted.

I will, in the next place, give a short account of the manner in which we learn to speak, as it may be deduced from the foregoing proposition. The new-born child is not able to produce a sound at all, unless the muscles of the trunk and larynx be stimulated thereto by the impression of pain on some part of the body. As the child advances in age, the frequent returns of this action facilitate it; so that it recurs from less and less pains, from pleasures, from mere sensations, and lastly from slight associated circumstances, in the manner already explained. About the same time that this process is thus far advanced, the muscles of speech act occasionally, in various combinations, according to the associations of the motory vibratiuncles with each other. Suppose now the muscles of speech to act in these combinations at the same time that sound is produced from some agreeable impression, a mere sensation, or a slight associated cause, which must be supposed to be often the case, since it is so observable, that young children, when in a state of health and pleasure, exert a variety of actions at the same time. It is evident, that an articulate sound, or one approaching thereto, will sometimes be produced by this conjoint action of the muscles of the trunk, larynx, tongue, and lips; and that both these articulate sounds, and inarticulate ones, will often recur, from the recurrence of the same accidental causes. After they have recurred a sufficient number of times, the impression, which these sounds, articulate and inarticulate, make upon the ear, will become an associated circumstance (for the child always hears himself speak, at the same time that he exerts the action) sufficient to produce a repetition of them. And thus it is, that children repeat the same sounds over and over again, for many successions, the impression of the last sound upon the ear exciting a fresh one, and so on, till the organs be tired. It follows, therefore, that if any of the attendants make any of the sounds familiar to the child, he will be excited from this impression, considered as an associated circumstance, to return it. But the attendants make articulate sounds chiefly; there will therefore be a considerable balance in favour of such, and that of a growing nature: so that the child's articulate sounds will be more and more frequent every day—his inarticulate ones grow into disuse. Suppose now, that he compounds these simple articulate sounds, making complex ones, which approach to familiar words at some times, at others such as are quite foreign to the words of his native language, and that the first get an ever-growing balance in

their favour, from the cause just now taken notice of; also, that they are associated with visible objects, actions, &c. and it will be easily seen, that the young child ought, from the nature of association, to learn to speak much in the same manner as he is found in fact to do. Speech will also become a perfectly voluntary action, *i. e.* the child will be able to utter any word or sentence proposed to him by others, or by himself, from a mere exertion of the will, as much as to grasp: only here the introductory circumstance, *viz.* the impression of the sound on the ear, the idea of this sound, or the preceding motion in pronouncing the preceding word is evident; and therefore makes it probable, that the same thing takes place in other cases. In like manner, speech, after it has been voluntary for a due time, will become secondarily automatic, *i. e.* will follow associated circumstances, without any express exertion of the will.

From the account here given of the actions of handling and speaking, we may understand in what manner the first rudiments are laid of that faculty of imitation, which is so observable in young children. They see the actions of their own hands, and hear themselves pronounce. Hence the impressions made by themselves on their own eyes and ears become associated circumstances, and consequently must, in due time, excite to the repetition of the actions. Hence like impressions made on their eyes and ears by others will have the same effect; or, in other words, they will learn to imitate the actions which they see, and the sounds which they hear.

In the same manner may be explained the evident powers which the will has over the actions of swallowing, breathing, coughing, and expelling the urine and fæces, as well as the feeble and imperfect ones over sneezing, hiccoughing, and vomiting. As to the motion of the heart, and peristaltic motion of the bowels, since they are constant, they must be equally associated with every thing, *i. e.* peculiarly so with nothing, a few extraordinary cases excepted. They will therefore continue to move solely in the original automatic manner, during the whole course of our lives. However, association may, perhaps, have some share in keeping these motions, and that of respiration, up for a time, when the usual automatic causes are deficient in any measure; and may thus contribute to their equability and constancy. It seems certain, at least, that where unequable and irregular motions of the heart and bowels are generated, and made to recur for a sufficient number of times, from their peculiar causes, in full quantity, a less degree of the same causes, or even an associated circumstance, will suffice to introduce them afterwards. And the same thing may be observed of hysteric and epileptic fits. These recur from less and less causes perpetually, in the same manner, and for the same reasons, as original automatic motions are converted into voluntary ones.

I will add one instance more of the transition of voluntary

actions into automatic ones of the secondary kind, in order to make that process clearer, by having it singly in view. Suppose a person who has a perfectly voluntary command over his fingers, to begin to learn to play upon the harpsichord; the first step is to move his fingers from key to key, with a slow motion, looking at the notes, and exerting an express act of volition in every motion. By degrees the motions cling to one another, and to the impressions of the notes, in the way of association so often mentioned, the acts of volition growing less and less express all the time, till at last they become evanescent and imperceptible. For an expert performer will play from notes, or ideas laid up in the memory, or from the connexion of the several complex parts of the decomplex motions, some or all; and, at the same time, carry on a quite different train of thoughts in his mind, or even hold a conversation with another. Whence we may conclude, that the passage from the sensory, ideal, or motory vibrations which precede, to those motory ones which follow, is as ready and direct, as from the sensory vibrations to the original automatic motions corresponding to them; and consequently, that there is no intervention of the idea, or state of mind, called will. At least, the doctrine of association favours this, and the fact shews, that there is no perceptible intervention, none of which we are conscious.

And thus, from the present proposition, and the nineteenth taken together, we are enabled to account for all the motions of the human body, upon principles which, though they may be fictitious, are, at least, clear and intelligible. The doctrine of vibrations explains all the original automatic motions, that of association the voluntary and secondarily automatic ones. And if the doctrine of association be founded in, and deducible from, that of vibrations, in the manner delivered above, then all the sensations, ideas, and motions, of all animals, will be conducted according to the vibrations of the small medullary particles. Let the reader examine this hypothesis by the facts, and judge for himself. There are innumerable things, which, when properly discussed, will be sufficient tests of it. It will be necessary, in examining the motions, carefully to distinguish the automatic state from the voluntary one, and to remember, that the first is not to be found pure, except in the motions of the new-born infant, or such as are excited by some violent irritation or pain.

COR. I. The brain, not the spinal marrow, or nerves, is the seat of the soul, as far as it presides over the voluntary motions. For, by Cor. II. of the last proposition, the efficacy of the motory vibratiuncles depends chiefly on that part of them which is excited within the brain.

COR. II. The hypothesis here proposed is diametrically opposite to that of Stahl, and his followers. They suppose all animal motions to be voluntary in their original state, whereas this hypothesis supposes them all to be automatic at first, *i. e.* involuntary,

and to become voluntary afterwards by degrees. However, the Stahlians agree with me concerning the near relation of these two sorts of motion to each other, as also concerning the transition (or rather return, according to my hypothesis) of voluntary motions into involuntary ones, or into those which I call secondarily automatic. As to final causes, which are the chief subject of inquiry amongst the Stahlians, they are, without doubt, every where consulted, in the structure and functions of the parts; they are also of great use for discovering the efficient ones. But then they ought not to be put in the place of the efficient ones; nor should the search after the efficient be banished from the study of physic, since the power of the physician, such as it is, extends to these alone. Not to mention, that the knowledge of the efficient causes is equally useful for discovering the final, as may appear from many parts of these observations.

COR. III. It may afford the reader some entertainment, to compare my hypothesis with what Des Cartes and Leibnitz have advanced, concerning animal motion, and the connexion between the soul and body. My general plan bears a near relation to theirs. And it seems not improbable to me, that Des Cartes might have had success in the execution of his, as proposed in the beginning of his Treatise on Man, had he been furnished with a proper assemblage of facts from anatomy, physiology, pathology, and philosophy, in general. Both Leibnitz's pre-established harmony, and Malebranche's system of occasional causes, are free from that great difficulty of supposing, according to the scholastic system, that the soul, an immaterial substance, exerts and receives a real physical influence upon and from the body, a material substance. And the reader may observe, that the hypothesis here proposed stands clear also of this difficulty. If he admit the simple case of the connexion between the soul and body, in respect of sensation, as it is laid down in the first proposition, and only suppose, that there is a change made in the medullary substance, proportional and correspondent to every change in the sensations, the doctrine of vibrations, as here delivered, undertakes to account for all the rest, the origin of our ideas and motions, and the manner in which both the sensations and these are performed.

COR. IV. I will here add Sir Isaac Newton's words, concerning sensation and voluntary motion, as they occur at the end of his Principia, both because they first led me into this hypothesis, and because they flow from it as a corollary. He affirms then, "both that all sensation is performed, and also the limbs of animals moved in a voluntary manner, by the power and actions of a certain very subtle spirit, *i. e.* by the vibrations of this spirit, propagated through the solid capillaments of the nerves from the external organs of the senses to the brain, and from the brain into the muscles."

COR. V. It follows, from the account here given of the voluntary and semi-voluntary motions, that we must get every day voluntary and semi-voluntary powers, in respect of our ideas and affections. Now this consequence of the doctrine of association is also agreeable to the fact. Thus we have a voluntary power of attending to an idea for a short time, of recalling one, of recollecting a name, a fact, &c. a semi-voluntary one of quickening or restraining affections already in motion, and a most perfectly voluntary one of exciting moral motives, by reading, reflection, &c.

PROP. XXII.—*It follows, from the Hypothesis here proposed, concerning the voluntary Motions, that a Power of obtaining Pleasure, and removing Pain, will be generated early in Children, and increase afterwards every Day.*

FOR the motions which are previous and subservient to the obtaining of pleasure, and the removal of pain, will be much more frequent, from the very instant of birth, than those which occasion pain. The number also of the first will be perpetually increasing, of the last decreasing. Both which positions may be evinced by the following arguments:

First, The pleasures are much more numerous than the pains. Hence the motions which are subservient to them are much more numerous also.

Secondly, The associated circumstances of the pleasures are many more in number than the pleasures themselves. But these circumstances, after a sufficient association, will be able to excite the motions subservient to the pleasures, as well as these themselves. And this will greatly augment the methods of obtaining pleasure.

Thirdly, It favours the position here advanced, that the motions subservient to pleasure are of a moderate nature; and therefore, that they can be excited with the more ease, both in an automatic and voluntary manner.

Fourthly, The pains, and consequently the motions subservient to them, are few, and of a violent nature. These motions are also various, and therefore cannot be united to objects and ideas with constancy and steadiness; and, which is most to be regarded, they end, at last, from the very make of the body, in that species of motion which contributes most to remove or assuage the pain. This species therefore, since it recurs the most frequently, and continues longest, must be confirmed by association, to the exclusion of the rest.

COR. I. Many changes in the actions of young children, very difficult to be explained, according to the usual methods of considering human actions, appear to admit of a solution from this proposition. These changes are such as tend to the ease, convenience, pleasure, of the young child; and they are sufficiently observable in the transition of the originally automatic actions

into voluntary ones, as matters of fact, whatever be determined concerning their cause. I shall therefore refer to them occasionally, in the course of these papers, as allowed matters of fact.

COR. II. It seems also, that many very complex propensities and pursuits in adults, by which they seek their own pleasure and happiness, both explicitly and implicitly, may be accounted for, upon the same, or such-like principles.

COR. III. To similar causes we must also refer that propensity to excite and cherish grateful ideas and affections, and trains of these, which is so observable in all mankind. However, this does not hold in so strict a manner, but that ungrateful trains will present themselves, and recur on many occasions, and particularly whenever there is a morbid, and somewhat painful, state of the medullary substance.

COR. IV. Since God is the source of all good, and consequently must at last appear to be so, *i. e.* be associated with all our pleasures, it seems to follow, even from this proposition, that the idea of God, and of the ways by which his goodness and happiness are made manifest, must, at last, take place of, and absorb all other ideas, and he himself become, according to the language of the Scriptures, *All in all*.

COR. V. This proposition, and its corollaries, afford some very general, and perhaps new, instances of the coincidence of efficient and final causes.

COR. VI. The agreement of the doctrines of vibrations and association, both with each other, and with so great a variety of the phænomena of the body and mind, may be reckoned a strong argument for their truth.

CHAP. II.

CONTAINING THE APPLICATION OF THE DOCTRINES OF VIBRATIONS AND ASSOCIATION TO EACH OF THE SENSATIONS AND MOTIONS, IN PARTICULAR.

SECT. I.

OF THE SENSE OF FEELING.

PROP. XXIII.—*To distinguish the several Kinds of Feeling from each other, and to assign the general Causes of the different Degrees of Exquisiteness in this Sense.*

HERE we may first distinguish feeling into the general and particular.

The general feeling extends to all the parts of the body, external and internal: for they are all susceptible of pain from wounds and inflammations, of being put into a pleasurable state, of numbness, and total want of sensation, and of perceiving heat, cold, and pressure. Some writers consider all the sensations of all the senses as so many kinds of feeling; but I do not here use this word in so extensive an acceptation.

The particular feeling is that more exquisite degree which resides in the insides of the hands, and especially in the ends of the fingers; and by which we distinguish the tangible qualities of bodies, *viz.* heat, cold, moisture, dryness, softness, hardness, smoothness, roughness, also their motion, rest, distance, and figure, with more accuracy than by any other part. These sensations are, for the most part, adiaphorous ones.

The greater exquisiteness of the particular feeling arises probably from the following causes:

First, The sentient *papillæ* rise high from the skin (becoming extreme parts thereby), and receive a large proportional quantity of nerves in the ends of the fingers.

Secondly, The ends of the fingers are themselves extreme parts, and consequently receive stronger agitations in their infinitesimal medullary particles, from the stronger vibrations of the

contiguous denser æther. For we must suppose, that the vibrations of the rarer æther within the nerves extend themselves a little way into the denser surrounding æther, and even become stronger to a certain distance; after which they become weaker again, and are, at last, quite suppressed by the increase of density in the æther, and by their own diffusion.

Thirdly, It is customary, in endeavouring to feel exquisitely, to rub the ends of the fingers against the tangible object. Now this friction may, by exciting vibrations, and a consequent contraction in certain muscular fibrils belonging to the *papillæ*, distend and erect these, and thereby increase their sensibility.

Fourthly, There is much here to be ascribed to practice and habit, *i. e.* to association; and it is chiefly on this account, that the sensations of the ends of the fingers give us so much more precise information concerning the tangible qualities of bodies, than those of the ends of the toes, since the structure of the nervous *papillæ* is alike in both. It ought to be considered as a part of this reason, that, according to the principles laid down in the last chapter, we may get a voluntary power of erecting the *papillæ* without friction, or of increasing and fixing the distention during friction, in order to feel with greater exquisiteness and precision.

The sense of feeling may also be distinguished into that of the external surface of the body, and that of the cavities of the nose, mouth, *fauces*, alimentary duct, *pelvis* of the kidnies, ureters, bladder of urine, gall-bladder, follicles, and ducts of the glands, &c. The sensibility in the last is much greater than in the first, because the impressions can more easily penetrate through the soft epithelium, with which the internal cavities are invested, than through the hard cuticle, because the compact fibrous membrane of the true skin does not suffer the vibrations to pass freely up the nerve through its own substance, but rather diffuses them along its surface, and because the moisture of the epithelium dissolves, and thereby renders active all the saline particles, which touch the internal cavities. In the mouth and nose this sensibility is so great, and attended with such distinguishing circumstances, as to have the names of taste and smell assigned respectively to the sensations impressed upon the *papillæ* of these two organs. And as the sensations of the alimentary duct have a near relation to, and connexion with, those of the mouth, I shall refer them to the head of taste. But the sensations of the other internal cavities may be comprehended more properly under feeling.

It ought also to be observed here, that the lips, nipples, and external parts of generation, have a more exquisite sensibility than the other external parts; partly from the structure of their *papillæ*, and partly from the thinness of the cutis, and softness and thinness of the cuticle. The extreme sensibility of the *cornea* and *tunica conjunctiva* of the eye may arise from the manner in which the nerves are here exposed, and the tension of these parts.

PROP. XXIV.—*To examine how far the Sensations of Heat and Cold are agreeable to the Doctrine of Vibrations.*

A BODY is termed *hot*, when its heat exceeds that of the part, with which we touch it; *cold*, when its heat is less than this. The terms *hot* and *cold* are therefore relative ones, and the qualities denoted by them run into each other without any precise distinguishing limits. We may consequently refer *cold* to *heat*, and, if we admit the doctrine of vibrations, we are to suppose, that the small parts of all bodies are agitated by subtle vibrations; and that when these vibrations exceed those of the part with which we touch them, they are called *warm* or *hot*; when they fall short, *cold*.

This may be regarded as a gross, general position, which presents itself upon the first consideration of this matter. But then, as, according to this definition of heat, all those objects of taste and smell, which excite strong vibratory motions in the organs, ought to excite heat, we must inquire farther into the vibratory motions of bodies termed *hot* in common language, and into the difference between these and the vibrations excited in the nerves of taste and smell by sapid and odorous bodies.

I conjecture therefore, that the vibrations belonging to heat are in general quicker and shorter, than the peculiar ones excited by tastes, smells, and colours; also that the last, or the vibrations of the rays of light, are quicker than those of tastes and smells. We may conceive farther, that all the vibrations of the small particles of the medullary substance, and interjacent æther, from whatever cause they arise, grow quicker as they grow shorter, *i. e.* weaker; or, according to the conjecture just made, that in declining they tend to those which impress the sensation of heat. For vibratory motions of different lengths can be isochronous only according to one law, *viz.* that of the accelerating force being in the simple proportion of the distance from the middle point of the vibration, as when a heavy body vibrates in a cycloid; whereas, if the accelerating force be in any less ratio than this, short vibrations will be quicker than long ones. Lastly, we are to conceive, that when two vibrations of different kinds, or frequencies, are impressed at the same time, they must reduce one another to some single intermediate one, unless the quicker be so much more numerous than the slower, as to be comprehended within them, so that both may be performed together without opposition or confusion.

Let us now inquire how far the several effects of heat and cold upon our bodies are agreeable either to the notion of vibrations in general, or to the particular conjectures of the last paragraph.

First, then, we may expect that heat will rarefy the solids and fluids of the body, and the last more than the first, which is agreeable to experience. For the increase of the agitations will make the small particles recede from one another, and that more

in fluid than in solid parts, because of their looser texture. There may be other reasons also, drawn from the particular unknown composition of each part, solid and fluid, which may subject them to greater or less rarefaction. Thus, I conjecture, that the red blood is more apt to be rarefied than the other fluids, and that it is by this means made a chief instrument in compressing the white medullary substance of the brain, and spinal marrow, in natural and morbid sleep, to both which heat contributes, as has been observed already.

Secondly, If heat be caused by vibrations, we may expect, that those propagated from the hot or cold body should diffuse themselves freely and instantaneously over the whole nervous system, *i. e.* the whole body; however along the surface of the skin, in an especial manner. This follows from the uniformity both of the whole medullary substance, and of the skin. The first communicates the vibrations which ascend along the nerves affected to the whole body, the last those impressed upon the part of the skin, which touches the hot or cold body, to the other parts of it. Now this is agreeable to experience: for when the whole body is too hot, or too cold, we find that the mere touch of a cold or hot body will give general relief immediately; and in some cases a thrilling or shivering may be felt to run along the skin.

Thirdly, If the skin be contracted by any cause different from the direct impression of cold, as by the pain propagated from a wound, the colic, the irritation of a stone in the bladder, &c. this contraction, first excited by an increase of vibrations in the muscular variously interwoven fibrils of the skin, may be expected afterwards to check and diminish the vibrations there, and thus to occasion the sensation of cold, agreeably to experience. The chilliness arising from matter absorbed, and from the cause of acute distempers, whatever that be, may admit of a like explanation.

The tremors, *i. e.* sudden, short, alternate contractions of the antagonist muscles, which happen in the foregoing cases, arise probably from an increase of vibrations, not subject to ideas, and the voluntary power, descending from the brain into the whole system of the muscles; and seem to differ from the stronger and larger convulsive motions of hysteric and epileptic disorders, called convulsions emphatically, rather in degree than kind. These tremors generally precede the sense of chilliness, when the contraction of the fibres of the skin does not arise from the direct impression of cold.

We may from hence pass to the sensation of chilliness, and the tremors, which are sometimes occasioned by the passions, fear, anger, surprise, joy, &c. Both the redness and the paleness of the lips, face, and neck, which are observable in these cases, are marks of a contraction in muscular fibrils; in a less degree in the first case, so as to check the return of the venal blood; in a greater in the last, so as to prevent the influx of the arterial.

Fourthly, It is easy to conceive, that heat may occasion pain,

agreeably to the hypothesis concerning pain, above proposed. For the strong vibrations excited by great heat must put the small parts beyond the spheres of each other's attraction, and so produce the solution of continuity. But neither does it seem inconceivable, that cold may have a like effect, agreeably to the doctrine of vibrations, though the process be different. For great cold, by checking the vibrations in the external part, to which it is applied, will alter the situation and distance of the small medullary particles there, and so must excite vigorous vibrations in the ascending nerves, and the corresponding region of the brain, which is just the effect occasioned by heat, applied to the same external part. Hence, if we are touched by a very hot or a very cold body, inadvertently, and without seeing it, it ought to be difficult to distinguish which it is, agreeably to the fact. The conflict between the diminished vibrations, in the external part to which cold is applied, and the previous ones subsisting in the corresponding part of the brain, may exalt these previous ones, as much as heat does, so as to render the first simple impression of cold similar to that of heat.

Fifthly, The continued impression of heat makes us more sensible of cold. For when heat has rarefied the parts, and adapted them to a peculiar strength and frequency of vibrations, differing from the usual standard, the cold, whose difference from the usual standard lies on the other side, must raise a greater conflict, and produce a greater change, than if the parts had remained at the usual standard. The continued impression of cold must for the same reasons make us more sensible of heat. This explication will perhaps suit with other theories of sensation, as well as with that drawn from vibrations. However, the mere consistency of any phænomena with the doctrine of vibrations is worthy of some attention in this inquiry.

Sixthly, When the calf of the leg is affected with the cramp, setting the foot upon a cold marble will afford immediate relief. For the cold may check the violent vibrations in the fibres of the *gastrocnemii* and *soleus*, directly and immediately; or it may do it by exciting vigorous vibrations of a different kind, which extend to their antagonist muscles, as well as to the fore-mentioned ones. But I judge the first account to be more probable.

Seventhly, If a limb, that has been much chilled with cold, be brought to a fire suddenly, it will first be much pained, and then mortify. For the vibrations excited by the fire, though moderate in respect of the usual standard, are yet excessive in respect of those which the cold has introduced, also in respect of that sphere of attraction, which it has now fixed upon the parts: there will arise therefore a violent conflict, solution of continuity, and consequent pain; and the parts will be agitated so much more than their present spheres of attraction will permit, that they cannot return to it any more, but must be entirely dis-united, and run into different combinations, *i. e.* the limb must

mortify. But, if the limb be put into cold water, rubbed, and gradually exalted to the usual standard of heat, it may be preserved. Where it is to be observed, that the heat of water, while fluid, is above the freezing point, and, consequently, greater than that of a frozen limb.

It may somewhat confirm this reasoning, to give a similar explication of some of the phænomena of glass bubbles, made by dropping melted glass into water. We may suppose then, that these fall at once into powder, when broken at their points, because the cold water has so far reduced the sphere of attraction, that all the parts of the bubbles are agitated beyond this, by breaking their points. But if a bubble be heated, and its parts brought to a larger sphere of attraction by the agitations from heat, it will no longer fall to powder when broken at its point. It may also have its parts ground away at pleasure, without falling to powder, because grinding agitates all the contiguous parts with strong vibrations, like heat, and enlarges the sphere of their attractions.

Eighthly, When the parts contiguous to a mortified slough have a sufficient heat in them, excited by the *vis vitæ*, or warm applications, the vibrations attending this life and heat of the parts ought to help to shake off and separate the mortified slough, *i. e.* to stop the mortification; which is agreeable to the fact. Hence mortifications from external cold, in bodies otherwise healthy, will come to separate soonest, and most perfectly, as it is frequently seen in cold climates. Hence also mortifications happening in the acute distempers of young persons, if they stop at all, stop sooner than those in the extreme parts of old persons.

Ninthly, It is said that cold water, sprinkled upon the distended limbs of malefactors upon the rack, renews and augments their pains. Now, we may here suppose, that the parts had, in some measure, begun to accommodate themselves to their distended state, by getting new and enlarged spheres of action; when therefore the cold water endeavours to contract the parts again, and to narrow the spheres of action, the limbs still continuing distended by the rack, it is evident, that a strong conflict, with violent vibrations, and the solution of continuity, must ensue. Was the limb released first, and then cold water applied, it might contribute, as in sprains, to restore the parts to their former state, without exciting any such violent conflict. The good effects of vinegar, verjuice, spirit of wine, and other contracting liquids, in sprains, are to be explained upon the same principles.

Tenthly, Hot or cold water feels hotter or colder, respectively, when the hand is moved in it, than when it is kept at rest. For the hand, when at rest, has time, a little to check or exalt the vibrations in the contiguous hot or cold water.

Eleventhly, When a person goes into cold water leisurely, he

is apt to sob, and to respire in a convulsive manner, for a short time. For the impression of the cold upon the lower limbs excites such vigorous vibrations in the abdominal and other muscles of expiration, as being nearer to the seat of the impression, than the muscles of inspiration, that a convulsive continued expiration is first produced, then a sob, or deep inspiration: and lastly, strong convulsive expirations and inspirations for some successions.

The good effects of cold bathing arise perhaps, in part, from its narrowing the sphere of attraction in the small parts of the muscular fibres, and at the same time making this attraction stronger. Hence it may be prejudicial in some paralytical affections, as it is found to be. For, if the small vessels of the nerves be obstructed, it may, by contracting the solids, increase the obstruction, and consequently, the impediment to the free vibrations necessary to sense and motion.

Twelfthly, Bathing in warm water, impregnated with active mineral particles, may, by exciting and increasing vibrations in the white medullary substance, as well as by other means, remove obstructions in its small vessels, and thus be serviceable in many paralytical disorders, as it is found to be in fact. The same reasoning is applicable to the stiffness, insensibility, and impotency, of motion, which the rheumatism often leaves in the limbs.

Cold bathing may in like manner be serviceable in paralytic and rheumatic disorders, by exciting and increasing vibrations; provided the ill effect from the immediate contraction do not preclude this good one.

Thirteenthly, Since frictions, and other impressions upon the skin, increase the vibrations there, it may be expected, that they should increase the heat. And this is the fact. If a person rub his hands together in cold weather, the sensation of heat will be felt to arise in a moment, and to go off again in a moment after he ceases to rub; for the vibrations excited by rubbing may be expected to languish immediately, if not kept up by continuing the friction.

Fourteenthly, Strong tastes may, according to the doctrine of vibrations, be expected to leave a heat upon the tongue, mouth, and *fauces*, as they are found to do. And, in general, all vivid impressions upon every part of our bodies ought to increase the heat generally or particularly; which perhaps is the case, though we are seldom able to determine this by observation.

Fifteenthly, All strong emotions of mind ought also to increase the heat of the body. This is a matter of common observation, if we except the chilliness of the skin, and coldness of the extremities, which have been explained above, agreeably to the doctrine of vibrations.

The three last articles favour the above delivered conjectures concerning the peculiar nature of the vibrations belonging to

heat. The phænomena enumerated in all the fifteen may admit of other explanations, at least in part, but of none, as far as I can judge, that are inconsistent with the doctrine of vibrations.

PROP. XXV. *To examine how far the Phænomena of Wounds, Burns, Bruises, Lacerations, Inflammations, and Ulcers, are agreeable to the Doctrine of Vibrations.*

THE manifest solution of continuity, which is the very essence of a wound, may occasion pain, agreeably to the doctrine of vibrations, in the manner that has been explained already. This is the immediate pain that attends a wound. The subsequent one is to be referred either to the head of inflammation, or to that of ulcer.

The immediate pain from burns has likewise been explained agreeably to the doctrine of vibrations, also the separation of the dead or mortified eschar, under the last proposition. The subsequent pain is to be referred to the heads of inflammation and ulcer, as before.

A bruise is supposed, and with the appearance of reason, to be an infinite number of infinitely small wounds. It ought therefore to be attended with a pain resembling that of a large wound, and yet not exactly the same, which is the fact. As large wounds are sometimes healed by the first intention, without any subsequent ulcer, so may bruises. If otherwise, the subsequent pain must again be referred to the heads of inflammation and ulcer.

Lacerations are great wounds attended with bruises, *i. e.* with an infinite number of infinitely small ones. These are never cured without coming to digestion, *i. e.* an ulcer, and the requisite previous inflammation.

The heat and distention of the small vessels in inflammations are sufficient to account for the pain attending them, upon principles already laid down.

In ulcers the nerves are exposed defenceless, and therefore are susceptible of the most violent vibrations, and consequent pain from slight impressions: to which it is to be added, that the moisture of ulcers, by dissolving the saline parts of bodies applied, greatly augments their actions upon the naked nerves.

Fomentations and cataplasms seem to afford relief in the foregoing cases, partly by diffusing an equal warmth all around, partly by their aqueous or oily moisture. For the diffusion of warmth prevents that conflict, which would arise between neighbouring parts of different heats; and the moisture, which insinuates itself among the small particles, sets them at greater distances, and consequently lessens their mutual actions. The violent vibrations will therefore be moderated on both accounts. The friction attending embrocations does in like manner diffuse vibrations all around, and the liniment or liquid, with which the

embrocation is made, may contribute according to its particular qualities. Hence embrocations are also of use in resolving obstructions.

In all these cases the violent vibrations, which ascend along the nerves of the injured part, must be communicated in a particular manner to the neighbouring branches, and occasion a slight inflammation, *i. e.* a soreness, there. This soreness is not perceived while the original inflammation subsists, being obscured by it. The vibrations in the neighbouring nerves may also be increased by the cessation of violent ones in the place of original inflammation. Hence the soreness of the neighbouring parts after colics, head-aches, &c. The pain in the external parts of the head, which follows a debauch, *i. e.* an inflammation of the brain, and its membranes, may be of the same kind.

These hints may serve to shew, that the doctrine of vibrations is as agreeable to the phænomena of wounds, burns, &c. as any other yet proposed, or even more so. But much farther inquiry is requisite.

PROP. XXVI.—*To examine how far the Phænomena of Itching and Titillation are agreeable to the Doctrine of Vibrations.*

ITCHING often attends the beginning and ending of inflammations, and particularly the eruption of inflammatory pustules. We may conclude therefore, according to the foregoing account of inflammations, that itching is caused by a moderate increase of vibrations, in a part of small extent.

It is agreeable to this, that the lodgment of the perspirable matter, or other cutaneous secretion, when hardened, occasions itching; for it is easy to conceive, that in these cases, an obstruction and slight inflammation in the small vessels of the skin may arise.

Pressure, which allays itching, may be supposed to do this by checking the vibrations.

Scratching may convert it into a pleasure, by communicating the increased vibrations to the neighbouring parts, in such a degree as falls within the limits of pleasure. And as this freer communication caused by scratching may increase the vibrations in the neighbouring parts, so it may lessen those which subsisted before in the point that itched, thus reducing all to an equality, or nearly so. At the same time it appears, that rude or long-continued scratching must, by the increase of vibrations, which it occasions, also by laceration, increase the heat, inflammation, and itching, and even end in pain.

Friction of the skin, without previous itching, excites a pleasurable sensation; and also ends in inflammation and pain, when carried too far, for the like reasons.

Since extreme parts are more apt to receive an increase of vibrations than others, as has been observed; it appears, that the

itching of the nose and *anus* may be expected to attend worms in the stomach or intestines, and the itching of the *glans penis* and *anus* a slight inflammation at the neck of the bladder from a stone. These instances shew, that vibrations run freely along the surfaces of uniform membranes; and this is farther confirmed in the last case, by the check which a pressure made *in perinæo*, or anywhere upon the *urethra*, will give to the itching in the *glans*.

Titillation is nearly related to itching. It is excited by slight impressions upon the more sensible parts, frequently renewed; and this may show, that it arises from an increase of vibrations. The impressions must be so slight as not to excite a contraction in the neighbouring muscular fibrils, and also frequently renewed, that the increase of vibrations may diffuse itself farther and farther perpetually; and thus the whole nervous system may, in some cases, be at last put into a pleasurable state, approaching to the limits of pain, and passing within them at times.

Hence it appears, that as soon as children have learnt to cry, or yield a sound, from nascent pains, and from pleasures just passing into pains, titillation may excite short, alternate, nascent cries in them, *i. e.* laughter, but not before. If the impressions be made upon the chest, the effect will be quicker and stronger, because these impressions have a direct influence upon the muscles concerned in laughter.

If a feather be passed slightly to and fro between the lips, it will excite a titillation there, which will diffuse itself into the neighbouring parts of the upper lip and chin, and pass into an itching in them. The original titillation between the lips may be allayed by pressing them together, and the consequent itching by pressure and friction, as in other cases. All these things suit with the hypothesis of vibrations, and of their free diffusion.

In like manner, the free diffusion of vibrations, and their influence in contracting the neighbouring muscles, may be inferred from the vomitings, which are excited by tickling the fauces with a feather.

PROP. XXVII.—*To examine how far the Sensations attending Pressure, and muscular Contraction, are agreeable to the Doctrine of Vibrations.*

As friction and titillation agree with heat in increasing vibrations, so pressure agrees with cold in checking them. Thus pressure abates the uneasiness from itching, as mentioned above; and binding, or otherwise gently compressing parts in pain, or inflamed, *i. e.* parts in which the vibrations are excessive, will, for the most part, afford relief; whereas friction would increase the pain to a great degree. But the pain usually becomes more violent the instant the compression is removed. For the mere elasticity of the parts alters their figure, *i. e.* produces internal

motions, with an increase of vibrations. Pressure may also increase vibrations in the internal parts, contiguous to those where it checks them; or even in the external ones, if it be so great as to occasion any considerable distention there. And thus there may be a variety of vibrations occasioned by the several kinds and degrees of pressure, sufficient to correspond to all the variety of sensations excited thereby.

Muscular contraction most commonly attends and is attended by pressure, as in the common motions of handling and walking, whereby we overcome the *vis inertię* of our own bodies, and of those which we have occasion to move or stop. Hence all the sensations which we receive from the *vis inertię* of matter, must be derived from these two sources of muscular contraction and pressure.

Now it has been observed already, that muscular contraction checks the vibrations in the contracted fibres, and increases them in the neighbouring parts. And it is easy to conceive, that the sensation corresponding to this alteration of vibrations may sometimes fall within the limits of pleasure, sometimes go beyond them. In young animals, also after sleep and rest in all, it is usually pleasant; after much labour, or sprains, and in inflammations, painful; and this, whether the disordered muscle itself, or its antagonist, be contracted. For there must be an increase of vibrations in the disordered muscle both before it can be itself contracted, and also in consequence of the contraction of its antagonist; as has been shewn before.

PROP. XXVIII.—*To examine how far the Phænomena of Numbnesses, and paralytical Insensibilities, are agreeable to the Doctrine of Vibrations.*

NUMBNESS, being a diminution of sensibility, ought, according to the doctrine of vibrations, to proceed from such causes, as either indispose the parts for the reception of vivid vibrations, or hinder their free ascent to the brain. Agreeably to this, a compression made upon the nerve, which leads to any part, will occasion a numbness in that part, the nerve below the compression being unfitted thereby to receive vibrations freely, and the nerve above incapable of transmitting freely such as are excited. A compression of a blood-vessel may have a like effect, because it must lessen that heat, and intestine motion, which a free circulation would communicate to the part. The compression usually made upon the skin, when we press a nerve or blood-vessel, will also contribute. And external cold will hasten the effect, when joined to the just-named causes; or produce it alone, if intense, or long continued. In like manner, numbness, from a compression made upon the nerves or blood-vessels, is much favoured by sleep, because the parts are then indisposed both to receive and to transmit vibrations.

The benumbed limb feels larger, because any gross body, which encompasses and presses upon a limb by its weight or stricture, deadens the vibrations in it; and therefore conversely, when the vibrations are so deadened from a different cause, the idea of a gross encompassing body, or, which is almost the same thing, of the enlargement of the limb, will be suggested to the mind. But this circumstance must be referred to the head of association.

When the benumbed part begins to recover its feeling, violent prickings are often perceived. Now these seem to take place in the points where the natural vibrations first return; suppose at the ends of the nervous *papillæ*, and to arise from the conflict between the natural vibrations in these points, and the languid ones in the neighbouring parts. However, they come to an equality at last, by their mutual influences, as well as by the return of the natural vibrations to all the parts; which may serve to shew how itching ceases at last of itself. Friction helps to disperse and remove these prickings, and to restore the lost sensibility, which is very suitable to the notion of vibrations, and to the effect which it has in itchings.

If the hand be held down, and shaken, its muscles being first relaxed by a voluntary power, a numbness will be occasioned, in which the fingers feel large, for the reason given above. This numbness seems to arise from the irregular agitations, or vibrations, excited in the small parts; which, being different from the natural ones, or those in which sensibility consists, must check them; just as the agitations of water from the wind hinder the free propagation of regular undulations from a stone cast into it; or as any commotion of the air checks the free and distinct communication of a sound. It seems also, that those irregular and dissonant vibrations, which shaking the hand causes in the small medullary particles of its nerves, may pass on from part to part, though not so freely as regular ones.

From hence we may proceed to consider the numbness occasioned by the stroke of the *torpedo*. For the oscillations of this fish's back may neither be isochronous in themselves, nor suitable to those which existed previously in the hand; and yet they may be so strong as not only to check and overpower those in the part which touches the fish, but also to propagate themselves along the skin, and up the nerves, to the brachial ganglion, and even to the spinal marrow and brain; whence the person would first feel the stupefaction ascend along the arm to the shoulder, and then fall into a giddiness, and general confusion, as is affirmed to happen sometimes. Some effects of concussions of the brain, and perhaps of the spinal marrow, also of being tossed in a ship, of riding backwards in a coach, and of other violent and unusual agitations of the body, seem to bear a relation to the present subject. But it would be too minute to pursue these things.

When a palsy arises from an internal cause, we may suppose,

that the medullary part of the brain, or of the spinal marrow, or the nerve itself, in all which the vessels are extremely fine, and therefore liable to obstructions, especially in old age, become opaque, and unqualified to receive and transmit vibrations freely, according to Sir Isaac Newton's opinion. Hence a diminution or entire loss of sense or motion, or both, may follow, according to the degree and extent of the obstruction and opacity. The voluntary power of motion is soon lost, as being an acquired faculty, and depending upon associated circumstances, and memory. But if there be any degree of inflammation in the fine vessels of the motory nerves, or of the corresponding parts of the brain, this may occasion convulsive motions; and, for the same reason, an inflammation in the sensory nerves, or their origins in the brain, may occasion pain. Now it is reasonable to expect such inflammations in many cases as a consequence of the obstructions, and both convulsive motions and pains are often found to attend paralytic affections.

PROP. XXIX.—*To examine how far the Phænomena attending on venomous Bites and Stings are agreeable to the Doctrine of Vibrations.*

THAT the active liquors, infused by venomous animals after they bite or sting, operate, in part, by the violent vibrations which they excite in the living parts immediately affected, and which are thence propagated along the nerves up to the brain, and also along the surface of the body, by means of the continuity and uniformity of the skin, may appear from the following reasons:

First, As the solids and fluids seem, in general, equally concerned in all the natural functions, and morbid deviations from them, it is most reasonable to refer part of the effects of venomous bites and stings to each. But it is difficult to conceive how these poisons should have any immediate effect upon the solid nervous capillaments, but by agitating their parts.

Secondly, The active particles of these poisons, which are able, in so small a quantity, to produce such violent disorders, and sometimes in a very short space of time, may well be conceived able also to agitate the nervous parts with strong vibrations.

Thirdly, If we suppose their first and most immediate effect to be upon the fluids, yet this may, or must, be agitations, that will afterwards be communicated to the solids.

Fourthly, The vibrations of the medullary particles, mentioned in this theory, seem peculiarly suited to answer the several quick and surprising effects of these poisons. The pain, swelling, redness, and lividness, all around the part affected, may easily be derived from the vibrations propagated all around. Oils and fats, rubbed upon the part, may, by damping these, prevent the ill

effects. Vibrations, propagated either along the skin, through the mouth and nose, or up to the brain, and thence along the eighth pair of nerves, or, which is most probable, both ways, to that very sensible part the stomach, may produce sickness and vomitings. And if the gall-duct be contracted from the same cause during the vomitings, a sudden jaundice will follow from the violence with which the gall is forced back into the blood by the action of vomiting. Joy, sorrow, fear, melancholy, may easily follow according to the respective natures of the poisons, because these, according to this theory, all arise from, and are attended by, corresponding vibrations in the white medullary substance of the brain. And a like account may be given of the aversion to black, and the delight in glaring objects, and strong colours. The corresponding nerves of different animals have probably a general resemblance to each other, just as the corresponding *viscera* and fluids have. And thus the poison of rabid animals may have a peculiar power of affecting the nerves of the *fauces*, and muscles of deglutition, so as to produce the *hydrophobia*. Cold bathing also, and music, whose immediate effects seem confined to the solids, to the exciting vibrations in them, may cure respectively in the bite of a mad dog, and of the tarantula.

However, what is here alleged is not at all to be so understood, as if the immediate effects of poisons upon the fluids were not also very considerable. In some cases they may be greater, in others less, than those exerted upon the solids. It seems probable, that the poison is communicated from the fluids immediately affected to those at a distance, chiefly by means of the serous vessels. For these, having numerous immediate communications with each other, will transmit it freely, and yet so as that all the neighbouring parts may be affected somewhat in proportion to their nearness to the seat of the injury, as they are found in fact to be; whereas, were the diffusion of the poison to be made by the circulation of the fluids alone, all the parts would have an equal chance. But the propagation of the poison along the solid capillaments of the nerves is also a principal reason why the neighbouring parts are more affected than the distant ones. The effects of inoculation bear a great resemblance to those of venomous bites and stings; and the same may be said of venereal and other infections.

PROP. XXX.—*To examine how far the tangible Qualities of Bodies admit of an Explanation agreeable to the Doctrine of Vibrations.*

HITHERTO we have considered only the more vigorous sensations of feeling, such as may be called the pleasures and pains of this sense. We come now to the feeble and adiaborous sensations. These are moisture, dryness, softness, with fluidity,

hardness, smoothness, roughness, motion, rest, distance, and figure. Now it seems very easy to conceive, that these, with their several varieties, may impress corresponding varieties of vibrations upon the nerves of feeling; also, that these last varieties will be chiefly compositions of the vibrations arising from pressure, and muscular contraction, *i. e.* from the *vis inertię* of matter.

Thus, since moist bodies adhere to the fingers, and so leave a smoothness with their own degree of cold or heat upon them, moisture may be judged of by the touch from this peculiar alteration of vibrations; and dryness from the absence of it. Liquid bodies make no alteration of figure in our fingers, and yield easily to their motions: soft ones do the same in a less degree; hard ones the contrary. Smooth bodies make an equable pressure, and give no resistance to a motion along their surfaces; rough ones the contrary. The motions of our own bodies are attended by the vibrations peculiar to pressure, and muscular contraction; of other bodies which touch our own, by those from pressure. We judge of rest by the absence of these. Distance is judged of by the quantity of motion, and figure by the relative quantity of distance. And thus it appears, that all degrees and kinds of these tangible qualities may impress corresponding vibrations upon those regions of white medullary substance of the brain, and spinal marrow, which correspond to the skin and muscles.

The same qualities are made also by means of light to impress vibrations upon our eyes, which correspond in great measure to those made on the sense of feeling, so as to vary with their varieties. And as the sense of sight is much more extensive and expedite than feeling, we judge of tangible qualities chiefly by sight; which therefore may be considered, agreeably to Bishop Berkley's remark, as a philosophical language for the ideas of feeling; being, for the most part, an adequate representative of them, and a language common to all mankind, and in which they all agree very nearly, after a moderate degree of experience.

However, if the informations from touch and sight disagree at any time, we are always to depend upon touch, as that which, according to the usual ways of speaking on these subjects, is the true representation of the essential properties, *i. e.* as the earnest and presage of what other tangible impressions the body under consideration will make upon our feeling in other circumstances; also what changes it will produce in other bodies; of which again we are to determine by our feeling, if the visual language should not happen to correspond to it exactly. And it is from this difference that we call the touch the reality, light the representative: also that a person born blind may foretell with certainty, from his present tangible impressions, what others would follow upon varying the circumstances; whereas if we could

suppose a person to be born without feeling, and to arrive at man's estate, he could not from his present visible impressions judge what others would follow upon varying the circumstances. Thus the picture of a knife, drawn so well as to deceive his eye, would not, when applied to another body, produce the same change of visible impressions, as a real knife does, when it separates the parts of the body through which it passes. But the touch is not liable to these deceptions. As it is therefore the fundamental source of information in respect of the essential properties of matter, it may be considered as our first and principal key to the knowledge of the external world.

PROP. XXXI.—*To explain in what Manner we are enabled to judge of the Seat of Impressions made on the external Surface of our Bodies.*

WHEN we apply the parts of our bodies to each other, particularly our hands to the several parts of the surface of our bodies, we excite vibrations in both parts, *viz.* both in the hands, and in that part of the surface which we touch. Suppose the hand to pass over the surface gradually, and the first impression will remain the same, while the last alters perpetually, because the vibrations belonging to the last are excited in different nerves, and by consequence enter the brain, or spinal marrow, at different parts. And this difference in the last impression or its vibrations, corresponding always to the part on which the impression is made, will at last enable us to determine immediately what part of our bodies we touch; *i. e.* what is the distance of the part touched from the mouth, nose, shoulder, elbow, or other remarkable part, considered as a fixed point. For by passing frequently from the mouth, nose, &c. to the part under consideration, children learn this very early, even without attending to it at all explicitly.

Sight also helps us to judge of this distance in the parts, which are frequently exposed to view, and this in proportion to that frequency.

Let us suppose then, that we are able to determine at once what external part of our bodies we touch, *i. e.* to determine how it is situated in respect of the other parts, and to shew the corresponding part in the body of another person; it will follow, that if a like impression be made not by our own hand, but by that of another, or by any foreign body, we shall know at once the part on which it is made. We shall also, supposing us arrived at a sufficient degree of voluntary power over the muscles, be able at once to put our hand upon the part on which the impression is made.

By degrees we shall learn to distinguish the part, not only when an impression like the gentle ones of our hands is made upon it, but also when a vivid, rude, or painful one is. For,

first, all impressions made upon the same part agree in this, whatever be their differences as to kind and degree, that they enter by the same nerves, and at the same part of the brain, and spinal marrow. Secondly, we impress a great variety of sensations ourselves by our hands, according as they are hot or cold, by friction, scratching, &c. and most impressions from foreign bodies will bear some resemblance to some of these. Thirdly, we often see upon what part impressions from foreign bodies are made. Fourthly, when they leave permanent effects, as in wounds, burns, &c. we always examine by feeling, where the impression was made.

Now from all these things laid together it follows, that in itchings from an internal cause, and in impressions where neither our hand or eye give us any information, we shall, however, be able to determine at once with tolerable accuracy what external part is affected, and to put our hand upon it, so as to confirm our present judgment, and render our future judgment, and voluntary power, more certain and ready. We shall also do this most readily in those parts which we see and feel most frequently, the hands for instance; less so, *cæteris paribus*, in those we seldom see or feel; and least so, where we never see the part, and seldom touch it. At least this seems to result from the theory. But it is to be observed, that the fact ought to be tried chiefly in children. For in adults the several degrees approach more to perfection, *i. e.* to an equality among themselves.

PROP. XXXII. — *To explain in what Manner, and to what Degree, we are enabled to judge of the Seat of Internal Pains.*

HERE we may observe, first, that as we never see or feel the internal parts, such as the lungs, heart, stomach, intestines, liver, kidneys, bladder, &c. we can have no direct information in the manner explained under the foregoing proposition.

Secondly, Since all pains diffuse an increase of vibrations into the neighbouring parts, the increased vibrations in the external parts, arising from internal pains, will be a gross general direction, so as to determine the seat of the pain within gross limits, in respect of superior and inferior, anterior and posterior, right and left.

Thirdly, Pressing the external parts, so as to augment or alleviate the internal pain, must contribute also.

Fourthly, Since all the internal parts in the *thorax* and *abdomen* receive branches from the intercostal nerve, which communicates with each vertebral pair, it follows that the internal pains will send vibrations up to the spinal marrow, which will enter in at the same parts of it, as the vibrations from external pains in the neighbourhood. At the same time it appears from the many ganglions, plexuses, and communications of nerves, in the *thorax*

and *abdomen*, also from the origin and distribution of the nerves of the *cauda equina*, that this can be no more than a gross general direction; and that the great number of sympathetic influences from these causes, also from the running of vibrations along membranes, and from their fixing particularly in nervous parts or extreme ones, will give occasion to many deceptions here, and in certain cases make the pain be felt, *i. e.* appear to be, in parts at a considerable distance from the seat of the disorder.

Fifthly, Suppose the patient to shew by the external parts whereabouts his pain is felt internally, then the physician may, from his knowledge of the situation of the internal parts in respect of the external, guess pretty nearly what internal part is affected.

Sixthly, The symptoms attending the pain, its cause and consequences, compared with the natural functions of the parts, with the history of diseases, and morbid dissections, will enable the physician to determine with great precision in some cases, and help a little in most.

Seventhly, When the patient has had long experience of the same kind of internal pains, or of different ones, he describes more exactly, and also gets certain fixed points, to which he refers his pains.

Eighthly, Anatomists and physicians may sometimes judge with great exactness in their own cases, having both a knowledge of the parts, and their functions, and also their own feelings to guide them.

This subject deserves a particular and accurate examination, it being of great consequence to be able to discover the seat and *causa proxima* of the distemper, from the complaints of the patient, and from the previous, concomitant, and consequent circumstances. I hope these two propositions may cast some light upon it.

Here we may add an observation deducible from the doctrine of association; *viz.* As we learn by degrees, from impressions made on the surfaces of our bodies, to attend particularly to the sensations impressed on, or existing in, each part, at pleasure, *i. e.* to magnify the vibrations which take place in it; so after disorders in the internal parts, the associated circumstances seem often to renew the painful vibrations there, and to occasion either the return of the like disorder, or some other; at least to have a considerable share in these effects, when produced by their causes in an inferior degree. Thus disorders in the bowels, caused at first by acrid impressions, lay the foundation for a return of like disorders on less occasions. Thus women that have often miscarried, seem to irritate the muscular fibres of the *uterus* by the recollection of the associated circumstances, and so to dispose themselves to miscarry more than according to the mere bodily tendency; fear and concern having also a great

influence here. All this will be farther illustrated by what follows under the next proposition.

PROP. XXXIII. *To explain in what Manner, and to what Degree, the Pleasures and Pains of Feeling contribute, according to the Doctrine of Association, to the Formation of our intellectual Pleasures and Pains.*

IT follows from the foregoing account of the power of leaving traces and of association, that all the pains from intense heat and cold, wounds, inflammations, &c. will leave a disposition in the nervous system to run into miniature vibrations of the same kind, and that these miniature vibrations will be excited chiefly by the associated circumstances. That is to say, the appearance of the fire, or of a knife, especially in circumstances like to those in which the child was burnt or cut, will raise up in the child's nervous system painful vibrations of the same kind with, but less in degree than, those which the actual burn or wound occasioned.

By degrees these miniature pains will be transferred upon the words, and other symbols, which denote these and such-like objects and circumstances: however, as the diffusion is greater, the pain transferred from a single cause must become less. But then, since a great variety of particular miniatures are transferred upon each word, since also the words expressing the several pains of feeling, affect each other by various associations, and each of them transfers a miniature of its own miniature upon more general words, &c. it comes to pass at last, that the various verbal and other symbols of the pains of feeling, also of other pains bodily and mental, excite a compound vibration formed from a variety of miniatures, which exceeds ordinary actual pains in strength. These compound vibrations will also have a general resemblance, and particular differences in respect of each other.

It follows therefore *a priori*, as one may say, and by a synthetic kind of demonstration, that admitting the powers of leaving traces, and of association, compound or mental pains will arise from simple bodily ones by means of words, symbols, and associated circumstances. And they seem to me to answer in kind and degree to the facts in general. If, farther, we admit the doctrine of vibrations, then these compound mental pains will arise from, or be attended by, violent vibrations in the nervous system, and particularly in the brain.

Agreeably to this account, we may observe that the mere words denoting bodily pains, though not formed into propositions or threatenings, affect children. However, since there happen daily associations of the mere words with freedom and security, and of propositions and threatenings with sufferings, children learn by degrees to confine their fear, sorrow, &c. to those things

which are esteemed the genuine signs, reasons, causes, &c. of sufferings. This is the case in general; but there are great particular differences both in children and adults; which yet, if accurately pursued, would probably not only be consistent with, but even confirm and illustrate, the doctrine of association.

And we may conclude upon the whole, since the pains of feeling are far more numerous and violent than those of all the other senses put together, that the greatest part of our intellectual pains are deducible from them.

In like manner the pleasures of an agreeable warmth, and refreshing coolness, when we are cold or hot respectively, of gentle friction and titillation, leave traces of themselves, which by association are made to depend upon words, and other symbols. But these pleasures, being faint and rare in comparison of others, particularly of those of taste, have but a small share in forming the intellectual pleasures. Titillation may perhaps be excepted. For laughter, which arises from it, is a principal pleasure in young children, and a principal source of the other pleasures, particularly of those of sociality and benevolence. Farther, since the miniatures left by the pains of feeling must in some cases be faint originally, in others decline from the diffusion, the faintness of the association, &c. these miniature pains will often fall within the limits of pleasure, and consequently become sources of intellectual pleasure; as in recollecting certain pains, in seeing battles, storms, wild beasts, or their pictures, or reading descriptions of them.

PROP. XXXIV.—*To give an Account of the Ideas generated by tangible Impressions.*

HERE it may be observed, first, that the very words, *burn*, *wound*, &c. seem even in adults, though not formed into propositions, or heightened by a conjunction of circumstances, to excite, for the most part, a perception of the disagreeable kind; however, so faint in degree, that it may be reckoned amongst the number of ideas, agreeably to the definitions given in the Introduction.

Secondly, The words expressing the pleasures of this sense are probably attended with perceptions, though still fainter in degree. These perceptions may therefore be called the ideas belonging to those words.

Thirdly, The words *moist*, *dry*, *soft*, *hard*, *smooth*, *rough*, can scarce be attended with any distinguishable vibrations in the fingers, or parts of the brain corresponding thereto, on account of the faintness of the original impressions, and the great varieties of them; however, analogy leads us to think, that something of this kind must happen in a low degree. But when the qualities themselves are felt, and the appropriated vibrations raised, they lead by association to the words expressing them; and thus we can distinguish the several tangible qualities from each other by

the differences of their vibrations, and declare in words what each is.

Fourthly, The vibrations excited in the sense of feeling by motion, distance, and figure, are so faint, and so various, that neither these words, nor any related expressions, can be supposed to excite any miniature vibrations in this sense. Yet still upon feeling motions and figures, and passing over distances, the differences of vibrations from pressure and muscular contraction, *i. e.* from the *vis inertiae* of our own bodies, or of foreign matter, suggest to us the words expressing these, with their varieties, by association.

Fifthly, The great extent of the sense of feeling tends to make the miniatures fainter, especially as far as the external parts are concerned; and would probably have so powerful an effect upon the miniatures raised in the internal parts, as to make them by opposing destroy one another, did not all the impressions of the same nature, *viz.* all those from heat, from cold, from friction, &c. by whatever external part they enter, produce nearly the same effect upon the brain. Whence the several miniatures left by particular impressions of the same kind must strengthen one another in the internal parts, at the same time that they obliterate one another in the external ones. However, where a person has suffered much by a particular wound, ulcer, &c. it seems, according to the theory, that an idea of it should be left in the part affected, or corresponding region of the brain, or spinal marrow.

Sixthly, The visible ideas of the bodies which impress the several sensations of feeling upon us, are, like all other visible ones, so vivid and definite, that they mix themselves with, and somewhat obscure, the most vivid ideas of feeling, and quite overpower the faint ones. Sight communicates to us at once the size, shape, and colour of objects; feeling cannot do the last at all, and the two first only in a tedious way; and is scarce ever employed for that purpose by those who see. Hence persons born blind must have far more vivid and definite ideas of feeling than others. An inquiry into their real experiences would greatly contribute to correct, illustrate, and improve, the theory of ideas, and their associations.

PROP. XXXV.—*To explain the automatic Motions, which arise from tangible Impressions.*

THE principal of these is the action of crying, which is in all animals, but especially young ones, the natural and necessary consequence of pain. I have already given some account of this action; but will here enter into a more particular detail of the circumstances, and their agreement with the foregoing theory.

Let us suppose then a young child to have a very painful impression made upon the skin, as by a burn. It is plain that the violent vibrations excited in the injured part will pass up to the

brain, and over the whole muscular system, immediately; putting all the muscles into a state of contraction, as much as may be, *i. e.* making the strongest set of muscles everywhere overpower the weaker, for a certain time, and then give place to them for a certain other time, and so on alternately. Since therefore the muscles of expiration are stronger than those of inspiration, the air will be forced strongly out of the *thorax* through the *larynx*, and, by consequence, yield a sound. It contributes to this, that the muscles of the *os hyoides* and *larynx*, acting all together, and drawing different ways, must suspend the cartilages of the *larynx*, so as both to narrow the passage of the air, and also render these cartilages more susceptible of vibrations. As to the muscles which contract and dilate the *larynx*, they are perhaps about equal in strength to each other, and therefore may, by opposing each other, keep the chink in a state intermediate between its least and greatest dilatation.

That the strongest set of antagonist muscles overpower the weaker, during the great effort in crying, may farther appear from the action of the extensors of the neck, and flexors of the hand (both which sets are stronger than their antagonists), at that time.

If it be objected here, that the elevators of the lower jaw, being stronger than the depressors, ought to keep the mouth shut during the action of crying, according to the foregoing reasoning, whereas the contrary always happens; I answer, first, that when both these sets of muscles act at the same time, in proportion to their natural strength, the mouth ought to be a little opened; secondly, that the vibrations which take place in the cartilages of the *larynx* seem to impart a peculiar degree of force to all the neighbouring muscles, *i. e.* to the depressors of the lower jaw; and, thirdly, that the muscles which pass from the *larynx* and *os hyoides* to the lower jaw act to an advantage in drawing it down, in the present case, because the *os hyoides* is at this time fixed by its other muscles.

The distortions of the face, which happen previously to crying, and during the course of it, seem to be sufficiently agreeable to the notions here advanced; the muscles, which draw the lips from each other, being much stronger, than those which close them.

The manner in which titillation occasions laughter in its automatic state, has been already explained. We may add here, that touching the cheeks of young children gently will excite smiling.

Friction also occasions many automatic motions in young children, as may be observed when their naked bodies, or hairy scalps, are rubbed by the nurse's hand; the motion being determined in these cases, as appears, by the strength and vicinity of the muscles.

The contraction of the hand in young children, which has been taken notice of already, may be excited by titillation, friction, and almost any impression on the palm; and is to be deduced

partly from the superior strength of the flexors here, partly from the exquisite sensibility of the palm. The contraction of the foot from impressions made on the sole is analogous to that of the hand.

It may not perhaps be amiss to add here, that the cellular substance intervenes less between the skin and subjacent muscles in the scalp, palm, and sole, than in other parts, as appears both from anatomical inspection and emphysemas; and that this may increase the influence of the impressions on these parts over the subjacent muscles.

PROP. XXXVI.—*To explain the Manner in which the automatic Motions, mentioned in the last Proposition, are converted into voluntary and semi-voluntary ones.*

THIS has been done, in some measure, already, in respect of the actions of crying, and contracting the hand, and their derivatives, speaking and handling; and will be done more completely hereafter in a proposition appropriated to the distinct consideration of the motions that are perfectly voluntary. I have therefore inserted the present proposition chiefly for the sake of regularity, and that the reader might have in one short view, from the propositions of this section, all the principal heads of inquiry relating to the sense of feeling.

It may not, however, be improper here to observe, that the great variety of frictions, flexures, and positions, which nurses give to young children, make a proportional variety of combinations of muscles which act together; and that these, by opposing the natural ones from juxtaposition, derivation of nerves, &c. to a certain degree, prepare the way for such voluntary combinations as are requisite in the future incidents of life.

SECT. II.

OF THE SENSE OF TASTE.

PROP. XXXVII.—*To assign the Extent of the Organ of Taste, and to explain, in general, the different Powers lodged in the different Parts of it.*

THE taste may be distinguished into two kinds, as before observed of feeling; *viz.* the particular exquisite one, which resides in the tongue, and especially in the tip of it; and the general one, which extends itself to the insides of the lips and cheeks, to the palate, *fauces*, *œsophagus*, stomach, and whole alimentary duct, quite down to the *anus*; the sensibility growing

perhaps less and less, perpetually, in going from the stomach to the *rectum*. The sensibility of the alimentary duct is probably of the same kind with, and not much greater in degree than, that of the internal surfaces of the gall-bladder, urinary bladder, *pelvis*, *ureters*, and, in general, of the secretory and excretory vessels, and of the receptacles belonging to the glands. But I refer the sensations of this duct to the taste, on account of their connexion with those of the tongue, in respect of their causes, uses, and effects.

As to the particular and superior powers of the tongue, they may, in part, be deduced from the number and largeness of its *papillæ*, and from their rising above the surface in living persons more remarkably than any other sentient *papillæ* in the whole body, so as to be extreme parts in an eminent degree. To which we ought perhaps to add, that the tip and sides, in which the taste is most exquisite, are also extreme parts. But there may be likewise a different peculiar distribution, and other causes of an exquisite sensibility, in the nerves of the tongue.

It deserves notice here, that the friction of the tongue against the palate is necessary, in order to excite the tastes of the aliments, which we masticate, in perfection. This practice is analogous to that of rubbing the ends of the fingers upon such bodies as we examine accurately by feeling; and both appear suitable to the notion of vibrations; also to that of the distention and erection of the sentient *papillæ*: which may even be seen in the *papillæ* of the tongue.

It has been observed, that bitters and acids applied to funguses of the brain, and even to issues upon the *vertex*, have sometimes occasioned the sensations of the tastes respectively arising from the same bitters and acids, when applied to the tongue. This may perhaps be solved by supposing, that the bitters and acids, when applied to the nerves of the fifth pair, in the funguses of the brain, and to those of the seventh, or perhaps of the fifth also, in the issues (for the fifth pair may transmit some branches to the external integuments from the *dura mater*, at the *vertex*), send up their own specific vibrations into those regions of the brain, which are the peculiar residence of tastes, *i. e.* to the regions which correspond to the fifth pair, according to some anatomists. And these sensations may even afford some evidence, that the fifth pair, not the ninth, supplies the tongue with sensory nerves.

PROP. XXXVIII.—*To examine how far the Phænomena of Tastes, and their specific Differences, are suitable to the Doctrine of Vibrations.*

HERE I observe, first, that heating any sapid liquid increases its taste, especially if it be of the bitter, spirituous, or acrid kind; and, conversely, that the impression of such tastes generates a

heat in the organ, which remains after the peculiar taste ceases. Now this connexion of certain tastes with heat is some presumption, that they arise from vibrations, provided we allow heat to arise from them, according to the common opinion.

Secondly, Since disagreeable tastes must, according to the account of pain given above, arise from such a violence in the vibrations excited, as produce the solution of continuity, and pleasant tastes, from more moderate degrees of vibrations, which, though they approach to the solution of continuity, yet fall short of it; the pains of taste must proceed from stronger vibrations than the pleasures. And, agreeably to this, bodies which impress very active and disagreeable tastes, manifest great activity in other trials for the most part.

Thirdly, It is very difficult to give any plausible account of the great variety of pleasant and unpleasant tastes from the doctrine of vibrations. However, the different frequency of vibrations, which belongs to the small particles of different sapid bodies, may be, in a good measure, the source of this great variety. For if the particles of the body *A* oscillate twice, while those of the body *B* oscillate only once, the sensations excited by them may be different, though both fall within the limits of pleasure, or both pass into those of pain. The differences of degree may also contribute; for it is observable, that different disagreeable tastes, in declining, leave agreeable ones, which approach to each other. This I have experienced in aloes, lime, and green tea not sweetened. It may therefore be, that the different disagreeable tastes were such rather on account of degree than kind. And, upon the whole, it may be, that the several combinations of the differences of kind with those of degree may be sufficient in number to account for all the varieties and specific differences of tastes.

Fourthly, Tastes appear to be more different than they are from the odours which accompany some of them. And this observation, by reducing the number of tastes properly so called, does somewhat lessen the difficulty of accounting for their number. But then it is also to be observed, that part of this difficulty is to be transferred to the head of odours.

Fifthly, The power of distinguishing tastes seems to depend upon sight, to a certain degree. And this consideration also lessens the number of tastes properly so called.

Sixthly, If we suppose the sapid body to consist of particles, that excite vibrations of different frequencies, which may be the case of many bodies in their natural state, and probably must be with such as are compounded by art, compound medicines for instance, a great variety of tastes may arise, some resembling the tastes of simple bodies, others totally unlike these: just as some of the colours reflected by natural and artificial bodies resemble one or other of the simple primary ones, whilst others are colours that can scarce be referred to any of these. And we may

farther suppose, in both cases, that where the vibrations approach so near in frequency as to overrule each other, and produce one species only, there results a taste, or a colour, that resembles a primary one; whereas, if the vibrations differ so much in frequency, as that two or more principal species keep their own frequency, the taste, or colour generated from them, cannot be likened to any primary one.

Seventhly, That there are different species of vibrations, which yet all constitute sweet or bitter, I conjecture not only from the foregoing general reasoning, but also because there are both sweets and bitters in all the three kingdoms, animal, vegetable, and mineral. Thus milk, sugar, and *saccharum Saturni*, all yield a sweet taste; gall, aloes, and crystals of silver, all a bitter one.

Eighthly, Some differences of taste may arise from the different time required for the solution, and consequent activity, of the sapid particles, also from the different local effect which they may have upon the *papillæ*, when absorbed by their venous vessels, &c.

Ninthly, Very nauseous and stupeficient tastes may perhaps arise from violent and irregular vibrations, and bear some analogy to the sensation, or want of it, impressed by the stroke of the *torpedo*.

Tenthly, It seems to deserve particular consideration here, that milk, and the flesh of certain domestic animals, yield tastes, which are naturally and originally pleasant, to a considerable degree, and yet not in excess, as sugar, and other very sweet bodies, are. For it is reasonable to conclude, that the particles of milk, and common flesh-meats, must agree very much in the strength and frequency of vibrations with the particles of our own solids and fluids. They may therefore just moderately increase the natural vibrations of the organ, when applied thereto, and enforced by suction, mastication, and friction of the tongue against the palate. For the same reasons we may guess, that the common diet of animals does not undergo very great changes, in respect of the vibratory motions of its particles, from its circulation, and consequent assimilation. However, there are some eminent instances to the contrary, especially in poisons. These last observations may be extended to vegetables, salutary and poisonous, respectively.

Eleventhly, Some acrid tastes, that of mustard for instance, affect the tip of the *uvula*, and the edge of the soft palate, in a particular manner. Now this may a little confirm the conjectures above made concerning the sensibility and irritability of extreme parts.

Twelfthly, It is easy to conceive, upon the principles of these papers, how sweets and bitters of an inferior degree should render those of a superior one less affecting, respectively, as they are found to do.

The foregoing articles are only imperfect conjectures, and do not even approach to a satisfactory solution. They may just serve to shew, that the doctrine of vibrations is as suitable to the phænomena of tastes, as any other hypothesis yet proposed. The following methods may perhaps be of some use for the analysis of tastes.

First, To make trials upon bodies whose particles seem similar to each other. Such are perhaps distilled spirits, acid, alkaline, and fermented; also salts and oils; but they must all be sufficiently purified by repeated distillations, solutions, and such-like chemical operations; else we are sure, that their component particles are heterogeneous.

Secondly, To note the changes of taste in chemical operations, and compare them with the changes of colour; which last, by discovering the sizes of the particles, may determine many things relating to their mutual actions. The solutions of metals in acids, by affording many singular and vivid tastes, and sometimes colours, seem to deserve especial notice here.

Thirdly, There are many regular changes in natural bodies, which, by comparison with other phænomena, may be of use. Thus it is remarkable, that the juice of many or most fruits is first acid, *i. e.* whilst unripe, then sweet, then vinous, after the first fermentation, then acid again, after the second fermentation.

This inquiry is of great importance in medicine and philosophy. And the theory of tastes appears capable of becoming a principal guide in discovering the mutual actions of the small particles of bodies. The difficulty is to make a beginning. This theory may not perhaps be more complex than that of colours; one may, at least, affirm, that the theory of colours appeared as complex and intricate before Sir Isaac Newton's time, as that of tastes does now; which is some encouragement to make an attempt.

PROP. XXXIX.—*To examine how far the several Sensations which affect the Stomach and Bowels, may be explained agreeably to the Doctrine of Vibrations.*

It will easily be conceived, that if tastes, properly so called, (of which under the last proposition) favour, or suit with, the doctrine of vibrations, the sensations of the stomach and bowels may likewise. But a particular examination of these sensations, and comparison of them with tastes, will make this more evident.

First, then, we may observe, that the stomach is less sensible than the tongue, the bowels in general than the stomach, and the inferior bowels than the superior. Thus opium, and bitters, and sometimes spirituous liquors, are disagreeable to the tongue, but fall within the limits of pleasure in the stomach. Thus bile is extremely nauseous in the mouth, and offends even the stomach; but it cannot be disagreeable to the *duodenum*, which it first enters, or the bowels, through which it passes. Thus also the

fæces seem to be equally suited to the several bowels along which they descend, though they grow perpetually more putrid and acrimonious in their descent; *i. e.* there is an abatement of sensibility in the bowels, which corresponds to the increase of acrimony in the *fæces*.

If it be objected here, that honey, *mercurius dulcis*, &c. offend the stomach and bowels often, though pleasant or insipid in the mouth, I answer, that such bodies require time, heat, solution, &c. before the whole of their qualities can be exerted.

Secondly, The particular manner in which opiates, fermented liquors, grateful aliments, and narcotics, may act first upon the stomach and bowels, and afterwards upon the whole body, agreeably to the doctrine of vibrations, has been given above in treating of sleep.

Thirdly, The action of vomits, purges, and acrid poisons, such as corrosive sublimate, is very reconcilable to this doctrine, by only supposing, that they excite very vigorous vibrations, and that these are communicated to the muscular coats of the stomach and bowels, to the muscles of the *abdomen*, and, in violent cases, to the whole muscular and nervous system. I shall consider the automatic motions, which arise from these causes, below, under a particular proposition. It may serve to shew the analogy of the sensations, and the general nature of active medicines, to observe, that these will often operate in several ways, *viz.* as vomits, purges, diuretics, diaphoretics, sternutatories, vesicatories, and corrosives, by a change of application and circumstances.

Fourthly, Since the meats, to which particular persons have an antipathy, and from which they receive violent ill effects, are, in general, highly grateful to others, one may perhaps conjecture, that the vibrations excited by these meats in the stomachs of those who have an antipathy to them, do but just pass the limits of pleasure; so as to diffuse themselves much farther, and more powerfully, than if the first impression was very painful.

Lastly, The connexion between the sensations of the tongue and stomach, and consequently between the manners of explaining them, may be inferred from the office of the taste, as a guide and guard to the organs of digestion; which is very evident, in general, in all animals, notwithstanding a few exceptions, more especially in men.

PROP. XL.—*To examine how far the Phænomena of Hunger are agreeable to the Doctrine of Vibrations.*

NATURAL hunger may be reckoned a pleasure in its first rise, and to pass into a pain only by increase and continuance. We may suppose therefore, that during hunger the nerves of the stomach are so irritable, as that the common motions of the muscular coat, and the impressions made by its contents in consequence of these motions, excite such vigorous vibrations, as

first lie within the limits of pleasure, and afterwards pass into the limits of pain. And when the sight of food, or any other associated circumstance, increases the sense of hunger instantaneously, it may be conjectured to do so, in great measure, by increasing the contractions of the muscular coat of the stomach.

But the sensibility and irritability of the nerves of the tongue are also increased by hunger; for common aliments yield a very different taste, according as the person is satiated or hungry. And it is probable farther, that the nerves of the upper part of the bowels sympathize with those of the stomach in hunger; and increase the uneasy sensation, in violent degrees of it.

Let us now consider in what way food may be supposed to lessen this sensibility and irritability of the nerves of the tongue, stomach, and bowels; and how abstinence, bitters, wines, &c. may increase them, upon the principles of these papers.

First then, As the small absorbing vessels in the mouth, stomach, and bowels, must, after eating for some time, be saturated with alimentary particles, those that are now applied will scarce make any impression for want of a sufficient attraction.

Secondly, Such as are attracted cannot make any considerable difference of vibrations, because the vibrations which they are qualified to excite, do already take place. And these two remarks, put together, shew, that a person may relish a second kind of food after being satiated with a first.

Thirdly, The actions of mastication, deglutition, and digestion, exhaust the neighbouring glands and glandular receptacles of their liquids, and the neighbouring muscular fibres of their ready power of contracting: these parts are therefore no longer susceptible of a pleasurable state, or only in a low degree.

Fourthly, Abstinence reverses all these steps; in which, however, the perpetual affusion, dilution, and ablution of the saliva has a considerable share. And thus after a proper interval the organs return to a state of great sensibility and irritability.

Fifthly, Bitters and acids exhibited in a moderate degree seem gently to increase the vibratory motions, and raise them before the due time to the degree that corresponds to hunger. A small quantity of food has the same effect, also agreeable motions of mind, fresh air, exercise, and many other things. But if the bitters, acids, &c. be carried beyond a certain degree, they occasion pain or sickness, which is very agreeable to the doctrine of vibrations, as laid down in these papers.

Sixthly, In fevers, the mouth, *fauces*, *œsophagus*, and stomach, are hot, dry, inflamed, and incrusted. They are therefore pre-occupied by vibrations of a kind quite different from those which attend hunger, and therefore exclude this state.

It may not be amiss to observe here, that the sensation of hunger is a guide and guard to the organs of digestion in a still more eminent degree, than the tastes of the several aliments.

PROP. XLI.—*To examine how far the Phænomena of Thirst are agreeable to the Doctrine of Vibrations.*

THIRST is opposite to hunger, and is a general attendant upon fevers. It follows also, in an evident manner, from all considerable degrees of heat in the *fauces*. The nerves therefore of the mouth, *fauces*, *æso-phagus*, and stomach, are, during thirst, pre-occupied by disagreeable vibrations, of the inflammatory kind, as above observed. And as the pleasures of taste may be said to resemble those of titillation, so thirst seems allied to itching.

It is agreeable to this account of thirst, that liquors actually cold afford immediate relief; also that warm diluents, which soften the parts, and wash off acrimonious particles, do it after some time. As the cause of thirst is of a permanent nature in fevers, it must return again and again, till the fever be removed. Gentle acids yield a pleasure in thirst, which seems to correspond to that which scratching excites, in parts that itch previously.

PROP. XLII.—*To examine how far the Changes generally made in the Taste, in passing from Infancy to Old Age, are agreeable to the Doctrines of Vibrations and Association.*

SOME of these changes are,

That sweets generally grow less and less agreeable, and sometimes even disagreeable, or nauseous at last.

That astringent, acid, and spirituous liquids, which displease at first, afterwards become highly grateful.

That even bitters and acrids first lose their offensive qualities, and after a sufficient repetition give a relish to our aliment.

And that many particular foods and medicines become either extremely pleasant or disgusting, from associations, with fashion, joy, hope of advantage, hunger, the pleasures of cheerful conversation, &c. or with sickness, vomitings, gripings, fear, sorrow, &c.

Now, in order to account for these changes, we may consider the following things.

First, That the organs become less and less sensible by age, from the growing callosity and rigidity of all the parts of animal bodies. The pleasant savours may therefore be expected to become less pleasant, and the moderately disagreeable ones to fall down within the limits of pleasure, upon this account.

Secondly, The disposition to vibrations in the organ and corresponding part of the brain must also receive some alteration by the frequent repetition of impressions. For though this returns, at a proper distance from each meal, to its former state, within an indefinite distance, as one may say, yet some difference there probably is, upon the whole, which in a sufficient length of time amounts to a perceptible one. However, we must also suppose on the other hand, that the make of the nervous system sets some bounds to this gradual alteration in the disposition to vibrate;

else the taste would be much more variable than it is, and continue to change more after adult age, than it is found to do in fact. It may perhaps change faster in the use of a high diet than of a low one; which would be an evidence of the reality of the cause here assigned.

Thirdly, The pleasant and painful impressions which particular foods and medicines make upon the stomach, always either accompany the taste, or follow it in a short time; and by this means an association is formed, whereby the direct pleasantness or nauseousness of the taste is enhanced, if the impressions upon the tongue and stomach, be of the same kind; or diminished, and perhaps overpowered, and even converted into its opposite, if they be of different kinds. For if the two impressions *A* and *B*, made upon the tongue and stomach respectively, be repeated together for a sufficient number of times, *b* will always attend *A* upon the first moment of its being made. If therefore *B* be of such a magnitude as to leave a trace *b* sufficiently great, the addition of this trace *b* to *A*, the impression made upon the tongue, may produce all the changes in it above-mentioned, according to their several natures and proportions. This follows from the doctrine of association, as it takes place in general; but here the free propagation of vibrations from the stomach to the mouth, along the surface of the membranes, adds a particular force. In like manner a disagreeable taste, by being often mixed with a pleasant one, may at last become pleasant alone, and *vice versa*: hunger and satiety may also, by being joined with particular tastes, contribute greatly to augment or abate their relish. And I believe it is by the methods of this third kind, that the chief and most usual changes in the taste are made.

Fourthly, The changes which are made by associations with mental pleasures and pains, or bodily ones not belonging to this organ, as with fine colours, music, &c. receive a like explication as the last-mentioned instances of associations. Here the pleasure excited in the eye or ear overrules the taste at first: afterwards we may suppose the organ to be so altered by degrees, in respect of the disagreeable taste, from its frequent impression, or other cause, as to have the solution of continuity no longer occasioned by its action. It is probable also, that the evanescent pleasures of sight and hearing, at least pleasant vibrations in the parts of the brain corresponding to these two organs, accompany these tastes ever afterwards.

It may be observed here, that the desire of particular foods and liquors is much more influenced by the associated circumstances, than their tastes, it being very common for these circumstances, particularly the sight or smell of the food or liquor, to prevail against men's better judgment, directing them to forbear, and warning them of the mischiefs likely to arise from self-indulgence.

PROP. XLIII.—*To examine how far the Longings of pregnant Women are agreeable to the Doctrines of Vibrations and Association.*

HERE we must lay down previously, that the *uterus* is in a state of distention during pregnancy; and that it propagates sympathetic influences by means of nervous communications to the stomach, so as to put it into a state of great sensibility and irritability. All this will be easily acknowledged.

It follows therefore, since the limits of pleasure and pain are contiguous, that the stomach during pregnancy may at some times have an eager appetite for food, as well as a nausea at others; that this appetite may be the more eager, because it borders upon a nausea; and that it will no more answer to the usual exigencies and circumstances of the body, than the nausea does. The same eager appetite will bring up the ideas of various aliments from prior associations; and if a new association of it, when particularly eager, happen to be made with this or that food or liquor, the sympathetic eager appetite will ever after bring in the idea of that food or liquor, and adhere inseparably to it. The same eager appetite may also be transferred upon something that is not properly a food, from its exorbitant nature, prior nauseas in respect of common food, and accidental joint appearance. And, upon the whole, the usual circumstances attending the longings of pregnant women are deducible from association, and are as agreeable to the doctrine of vibrations, as to any other yet proposed; or even more so.

It may illustrate this account to observe, that in the usual cases of melancholy madness, an uneasy state seems to be introduced into the white medullary substance of the brain by the degeneration of the humours, or other such-like mechanical cause, which carries the vibrations within the limits of pain, and raises an inflammation *sui generis* in the infinitesimal vessels of the medullary substance; that ideas of objects of fear, sorrow, &c. are raised, in consequence of this, by means of prior associations; and that after some time, some one of these, by happening to be presented oftener than the rest, by falling more in with the bodily indisposition, &c. overpowers all the rest, excites and is excited by the bodily state of fear, sorrow, &c. till at last the person becomes quite irrational in respect of this one idea, and its immediate and close associates, however rational he may be in other respects. And a like account may be given of the violent particular desire towards a person of a different sex, where this desire rests chiefly in the sensual gratification, and the beauty of the person. And all these three instances seem to me to favour the doctrine of vibrations a little, as well as that of association very much.

PROP. XLIV.—*To explain in what Manner, and to what Degree, pleasant and unpleasant Tastes contribute, according to the Doctrine of Association, to form our intellectual Pleasures and Pains.*

THE pleasures of the taste, considered as extending itself from the mouth through the whole alimentary duct, are very considerable, and frequently repeated; they must therefore be one chief means, by which pleasurable states are introduced into the brain, and nervous system. These pleasurable states must, after some time, leave miniatures of themselves, sufficiently strong to be called up upon slight occasions, *viz.* from a variety of associations with the common visible and audible objects, and to illuminate these, and their ideas. When groups of these miniatures have been long and closely connected with particular objects, they coalesce into one complex idea, appearing, however, to be a simple one; and so begin to be transferred upon other objects, and even upon tastes back again, and so on without limits. And from this way of reasoning it may now appear, that a great part of our intellectual pleasures are ultimately deducible from those of taste; and that one principal final cause of the greatness and constant recurrency of these pleasures, from our first infancy to the extremity of old age, is to introduce and keep up pleasurable states in the brain, and to connect them with foreign objects.

The social pleasures seem, in a particular manner, to be derived from this source; since it has been customary in all ages and nations, and is, in a manner, necessary, that we should enjoy the pleasures of taste in conjunction with our relatives, friends, and neighbours.

In like manner nauseous tastes, and painful impressions upon the alimentary duct, give rise and strength to mental pains. The most common of these painful impressions is that from excess, and the consequent indigestion. This excites and supports those uneasy states, which attend upon melancholy, fear, and sorrow.

It appears also to me, that these states are introduced, in a great degree, during sleep, during the frightful dreams, agitations, and oppressions, that excess in diet occasions in the night. These dreams and disorders are often forgotten; but the uneasy states of body, which then happen, leave vestiges of themselves, which increase in number and strength every day from the continuance of the cause, till at last they are ready to be called up in crowds upon slight occasions, and the unhappy person is unexpectedly, and at once, as it were, seized with a great degree of the hypochondriac distemper, the obvious cause appearing no ways proportionable to the effect. And thus it may appear, that there ought to be a great reciprocal influence between the mind and alimentary duct, agreeably to common observation; which is farther confirmed by the very large number of nerves distributed there.

PROP. XLV. — *To give an Account of the Ideas generated by the several Tastes.*

As the pleasures of taste are in general greater than those of feeling, and the pains in general less, it follows that the ideas which are affixed to the several words expressing the several pleasant and unpleasant tastes, will be of a middle nature in respect of the ideas generated by tangible impressions; and lie between the ideas of the pains of feeling, and those of its pleasures.

Agreeably to this, it seems very difficult, or even impossible, to excite a genuine vivid miniature of an acid, sweet, salt, or bitter taste, by the mere force of imagination. However, the vibrations peculiar to each of these leave such vestiges of themselves, such an effect in the tongue, and corresponding parts of the brain, as, upon tasting the qualities themselves, at once to bring up the names whereby they are expressed, with many other associated circumstances, particularly the visible appearances of the bodies endued with these qualities. And these vestiges may be called ideas. Analogy leads us also to conclude, as before observed under feeling, that some faint vestiges or ideas must be raised in the parts of the brain corresponding to the tongue, upon the mere passage of each word, that expresses a remarkable taste, over the ear. And, when the imagination is assisted by the actual sight or smell of a highly grateful food, we seem able to raise an idea of a perceptible magnitude. This is confirmed by the manifest effect exerted upon the mouth, and its glands, in such cases.

The sight of what we eat or drink seems also, in several instances, to enable us to judge more accurately of the taste and flavour; which ought to be effected, according to this theory, by raising small ideas of the taste and flavour, and magnifying the real impression in consequence thereof. For an actual impression must excite vibrations considerably different, according to the difference in the previous ones; and where the previous ones are of the same kind with those impressed, the last must be magnified.

PROP. XLVI.—*To explain the automatic Motions, which arise from the Impressions made on the Organ of Taste.*

THE motions dependent on the sensations of the tongue, and alimentary duct, may be thus enumerated: suction, mastication, deglutition, the distortion of the mouth and face in consequence of nauseous tastes, the peristaltic motion of the stomach and bowels, vomiting, *ructus*, hiccough, spasms, and violent motions in the bowels, the motions which empty the neighbouring glands, and the expulsion of the *faeces*.

First, then, Suction in new-born children appears to depend

chiefly on the sensations of the lips and tongue. I say *chiefly*, because some predisposition thereto may be generated *in utero*, or otherwise impressed, and the great aptness of new-born children in sucking seems to favour this. However, when we consider, that the impressions of the cold air upon the lips and mouth in its passage to the lungs, of the nipple upon the lips, and of the milk upon the tongue, ought to excite motions in the neighbouring muscles of the lips, and lower jaw; that the motions which concur to the action of suction, are such as might be expected from these causes; and even that the motions of the head and neck, by which the child indicates the want of a breast, may flow from the great sensibility and irritability of these parts, when the child is hungry; a presumption arises, that the whole action of suction, with all its circumstances, is excited by the impressions mechanically or automatically; and that by the running of vibrations from the sensory nerves into the neighbouring motory ones.

Secondly, The first rudiments of the action of mastication are derived from that of suction, *i. e.* from the alternate motion of the lower jaw necessary to squeeze out the milk. After this action has been excited for some time by the taste of the milk, it will return with sufficient facility from the impressions made by solid food; and the same impressions may excite other motions in the muscles of the tongue and cheeks, *viz.* those which concur to make the action of mastication in its imperfect and automatic state.

Thirdly, It may appear in like manner, that the pleasurable impressions of the milk upon the tongue, mouth, and *fauces*, of new-born children, may excite those motions of the muscles of the tongue, *os hyoides*, soft palate, and *fauces*, which make the action of deglutition; and consequently, that this is deducible from sensation automatically.

It confirms this position, that, according to the theory of these papers, the soft palate ought to be drawn down by the impressions made on the tongue and mouth, not drawn up; since this last would be to suppose the sensory vibrations to pass over muscles that are near, and run to those at a distance, which is absurd. For Albinus has proved, both from anatomy, and the observation of the fact, that the soft palate is drawn down in swallowing; not up, according to the opinion of Boerhaave.

It confirms it also, that nauseous liquids are immediately and mechanically rejected by young children; the impressions arising from them producing such a contraction as shuts the passage.

It confirms it still farther, that young children do not swallow their *saliva*. For this makes no impression sufficient to generate the action of deglutition in an automatic way.

We may conjecture here, that the common vibrations, excited in the membrane of the mouth and *fauces*, grow particularly strong at the tip of the *uvula*; and that a greater power of

contraction is transmitted to the neighbouring muscles upon this account.

Fourthly, It may be observed, that nauseous tastes distort the mouth and face automatically, not only in young children, but even in adults. And, for the same reason, pleasant ones ought to have a less effect, of the same kind; as they seem to have. And I conjecture, that the distortions of the face, which attend grief, also the gentle, smiling motions, which attend joy, are, in part, deducible from this source.

I conjecture also, that the *risus sardonius*, and the tendency to laughter, which some persons observe in themselves in going to sleep, have a relation to the fore-mentioned motions of the face. As the muscles here considered are, in great measure, cutaneous, they will, on this account, be more subject to vibrations excited in the mouth, or which run up to it from the stomach.

Fifthly, It may easily be conceived, that the impressions, which the aliment and *fæces* make upon the stomach and bowels, may excite the peristaltic motion in their muscular coats. It only remains to shew, why this should tend downwards. Now, for this, we may assign the following reasons. First, that the action of swallowing determines that of the stomach to move the same way with itself, *i. e.* downwards; and that this determination may, in common cases, carry its influence as far as the great guts. Secondly, that the contraction of the upper orifice of the stomach may stop the waves that sometimes come upwards in the stomach, and return them back, so as to force open the *pylorus* where that is less contracted; as on the other hand, where the *pylorus* is more contracted than the upper orifice, the motion of the stomach is inverted, and there arises a disposition to *ructus* or vomiting. Thirdly, that when waves ascend in the lower bowels, a gentle contraction in the *pylorus* may be sufficient to stop and return them. Fourthly, that one principal use of the *cæcum*, and *appendicula vermiformis*, which last is an extreme and pointed part, seems to be, to return the waves, which the constriction of the *anus* may send upwards. And the effects of glysters and suppositories in procuring stools, *i. e.* in putting the whole *colon* into motion, agree well with this use of the *cæcum*, and *appendicula vermiformis*. It agrees also with all the reasoning of this paragraph, that when a stoppage is made any where in the bowels by an inflammation, spasm, strangulation from a rupture, &c. the peristaltic motion is inverted.

I have been informed, that in a person who had some inches of the *ilium* hanging out of his body, so that the peristaltic motion might be viewed, the least touch of a foreign body would stop this motion at once. It agrees with this, that when rabbits are opened alive, the peristaltic motion does not take place till after some time, *viz.* because the handling of the bowels has checked it. May we not hence suspect, that the fibres of the muscular coat

of the bowels are contracted by an electrical virtue, which passes off, and disappears for a time, upon the touch of non-electrics? Or may we suppose, that such touches stop subtle vibrations in the small parts of the fibres?

Sixthly, Since vomiting is excited by disagreeable and painful impressions in the stomach, and requires the contraction of the diaphragm, and abdominal muscles, it agrees well with the notion, that sensory vibrations run into the neighbouring muscles for contracting them. I suppose also, that both orifices of the stomach are strongly contracted, previously to vomiting; and that the upper orifice, being most sensible, is contracted most strongly. Hence its power of contraction may be soon exhausted, and consequently it may open of itself in the action of vomiting. However, it may, in some cases, require to be forced open by the superior action of the diaphragm, and abdominal muscles. Almost all great pains and disorders in the lower belly occasion vomiting; which is very agreeable to the foregoing notion.

The nose itches, the mouth flows with water, the lower lip trembles, both are pale, and the person yawns, previously to vomiting, in many cases; all which things favour the notion of vibrations running freely along the surfaces of membranes.

Ructus, or the expulsion of wind from the stomach, is nearly related to vomiting, differing rather in degree than kind. Its suitableness therefore to the theory of these papers must be judged of from what has been advanced concerning vomiting.

The hiccough is also related to vomiting. It is supposed to proceed from an irritation at the upper orifice of the stomach, causing a sudden contraction of the diaphragm, so as to pull down the *pharynx* and *larynx* after it. May it not rather be a sudden contraction of the inferior or small muscle of the diaphragm only? This is particularly near the supposed seat of irritation; and upon this supposition, sneezing, surprise, and all other methods of making the whole diaphragm act together strongly, would remove it, as is observed in fact.

Seventhly, Permanent spasms, and violent motions, in the bowels, arise in consequence of uneasy and painful impressions there from indigested aliment, acrid *feces*, irritating purges, poisons, &c. They are generally attended with the fermentation of the contents of the bowels, and the consequent generation of air; which, when confined by a spasm on each hand, distends the intermediate part of the bowel often to an excessive degree, causing a proportional degree of painful vibrations. If we suppose these vibrations to check themselves all at once, by occasioning a sudden contraction in the affected membrane, they may be propagated over the whole nervous system instantaneously, and give rise to the convulsion-fits, which happen to young children from gripes, and distention of the stomach and bowels, and to adults, from poisons, &c. This is upon supposition, that neither spasm gives way: for, if either does, the pain goes off, for a time at

least, without farther ill symptoms. Such pains in the bowels resemble those in the bladder, when the *detrusor* and *sphincter* are both contracted violently at the same time, by the irritation of a stone. The stomach, the gall-bladder, and *rectum*, all seem capable of like contractions in muscular fibres, that have opposite actions. The causes of all these spasms and motions are evidently the impressions in the neighbourhood, and their circumstances are, at first sight, agreeable to the theory of these papers.

Eighthly, The glands belonging to the mouth, and alimentary duct, appear to me to be emptied, not only by the compression, which the neighbouring muscles and muscular fibres make upon them, but also by the sensory vibrations which run up their excretory ducts, into the *folliculi*, and receptacles where there are such, and even into the secretory ducts; by which the peristaltic motion of all these is increased, so as both to receive more freely from the blood during their state of relaxation, and to squeeze more strongly through the excretory ducts during their state of contraction. Thus tobacco, *pyrethrum*, and other acrids, solicit a profuse discharge from the salival glands, by being barely kept in the mouth, *i. e.* though the neighbouring muscles do not squeeze the glands by the action of mastication. Thus likewise vomits and purges increase both the secretions of all the glands of the intestines, and those of the liver and *pancreas*. It may be also, that the vibrations which run up the gall-duct are sometimes so strong as to occasion a spasm there; in which case, if the patient vomit at the same time, a symptomatic and temporary jaundice may follow.

Ninthly, The expulsion of the *fæces* in new-born children is perfectly automatic, and seems to follow even from very gentle compressions of the abdominal muscles, when the *rectum* is full, inasmuch as the *sphincter ani* has in *them* scarce any force. The same may be said of the expulsion of the urine, the *sphincter vesicæ* being also very weak in new-born children. To which we may add, that the least irritation from fulness or acrimony in the *rectum* or bladder throws the abdominal muscles into contraction in young children, both on account of the extreme sensibility and irritability of their whole nervous systems, and because they have, as yet, no associated influences over the muscles of the *abdomen*, whereby to restrain their contractions.

As the sphincters of the *rectum* and bladder gain strength, more force is required to expel the *fæces* and urine. However, it appears, that these muscles usually exhaust themselves, previously to the instant of expulsion, thus giving free scope to their antagonists. For, according to theory, they ought to be contracted sooner and stronger than their antagonists, as being nearer to the seat of irritation.

The actions of vomiting, and expulsion of the *fæces*, are very nearly related to one another in their automatic state. However, it seems to me, that an irritation in the stomach produces only a

gentle contraction in the *sphincter ani*, viz. such a one as does not exhaust its power, and which therefore tends to confine the *æces*. In like manner, an irritation in the *rectum* may gently contract the upper orifice of the stomach. It deserves notice here, that the *sphincter ani* lies out of the *peritonæum*; and consequently, that vibrations cannot run from it to the orifice of the stomach along the *peritonæum*, nor *vice versâ*. The same observation holds in respect of the *sphincter* of the bladder.

The circumstances attending the exclusion of the *æcus*, which continues automatic perfectly or nearly, may be much illustrated by what is here delivered concerning the expulsion of the *æces*.

PROP. XLVII.—*To explain the Manner and Degree in which the automatic Actions, mentioned under the last Proposition, are influenced by voluntary and semi-voluntary Powers.*

WHEN young children continue to suck, or masticate a tasteless body put between their lips, or into their mouths, we may conceive, that the actions of suction and mastication begin to pass from their automatic towards their voluntary state. Drinking out of a vessel, so as to draw up the liquid, is learnt, in part, from sucking the breast, in most cases; but it may be learnt without, as is evident in those children that are dry-nursed. Mastication, when it approaches to a perfect state in children, is chiefly voluntary, the first rudiments receiving perpetual changes, so as to fall in more and more with pleasure and convenience. See Prop. XXII. Cor. I. In adults, both suction and mastication follow the command of the will with entire readiness and facility. The manner in which this is effected has been already explained in treating of the voluntary power of grasping.

Deglutition of insipid liquors becomes voluntary early. But it is difficult even for some adults, to swallow pills and boluses, though tasteless; and very nauseous liquids are sometimes rejected by them automatically, as well as by young children. The action of deglutition affords manifest evidences of the gradual transition of automatic motions into voluntary ones, as well as of voluntary ones into such as are secondarily automatic. For, in common cases, we swallow without the least express intention.

When the face of a child or adult is distorted upon the sight of a nauseous medicine, which has before produced distortions automatically, *i. e.* from the impressions made on the mouth and *fauces*, we see an evident instance of the power of associated circumstances; and may have the conception of voluntary powers, derived from a succession of such associations, made easy to the imagination.

The peristaltic motion of the stomach and bowels remains automatic to the last, depending partly on the vibrations descending from the brain, partly on the impressions made on the

villous coat. It cannot depend on associated circumstances in its common state, because, being perpetual, it is equally associated with every thing, *i. e.* particularly so with nothing. However, as grateful aliments increase it, the sight of them may do the same by association. Could we see our stomachs and bowels, it is probable, that we should get some degree of voluntary power over them.

Vomiting is sometimes, and a nausea often, excited by associated circumstances; and there have been instances of persons who could vomit at pleasure by first introducing some of these. But, I suppose, this action never follows the mere command of the will, without the intervention of some strong associated circumstance. We have, in like manner, a semi-voluntary power of restraining vomiting, for a time at least, by means of ideas of decency, shame, fear, &c.

Some persons have a power of expelling flatulencies from the stomach in a manner which is almost voluntary; and many imitate an automatic hiccough very exactly. It facilitates these powers, that both the motions here considered are very frequent especially during childhood. Those who can hiccough voluntarily, attain to it by repeated trials, as in other cases of voluntary actions.

The spasms, and violent motions of the bowels, cannot be expected to become voluntary. They do, however, seem to return in many cases, from less and less bodily causes perpetually, on account of associated circumstances, as has been already remarked.

In like manner, the vibrations which run up the excretory ducts of the glands, must be supposed to remain totally under the influence of their original causes; unless we except the contraction of the gall-duct, which happens sometimes in violent fits of anger. This may perhaps arise from vibrations excited by associated circumstances.

Both the power of expelling the *fæces* and urine, and that of checking this expulsion, are under the influence of many associated circumstances, and voluntary to a considerable degree. And it will easily appear, from the principles of this theory, that they ought to be so. The filling the chest with air by the contraction of the muscles of inspiration, is a circumstance which never attends these actions in their purely automatic state. Young children learn it by the same steps as they do other methods of exerting the greatest force, and to the greatest advantage. See Prop. XXII. Cor. I.

It deserves notice here, that the action of the muscular coat of the stomach and intestines is far less subject to the power of the will, than that of the great fleshy muscles of the trunk and limbs. The efficient cause of this is the great and immediate dependence which the action of the muscular coat has upon the sensations of the villous, on account of the exquisiteness of these

sensations, their constant recurrency, and the contiguity of the coats. And there is a perfect agreement of the final cause with the efficient here, as in other cases. For any great degree of voluntary power over the muscular coat of the bowels would much disturb the digestion of the aliment, as those nervous persons experience, who are so unhappy as to be exceptions to the general rule, through the influence of associated circumstances.

SECT. III.

THE SENSE OF SMELL.

PROP. XLVIII.—*To assign the Extent of the Organ of Smell, and to explain in general the different Powers of which it is possessed.*

SMELL may be distinguished into two sorts: first, that exquisite sensation, which odoriferous bodies impress upon the nose by means of alternate inspiration. This is smell, in the peculiar and most proper sense of the word; and it resides chiefly, or perhaps entirely, in that part of the pituitary membrane, which invests the cells of the *ossa spongiosa*. Secondly, that sensation or flavour, which most kinds of aliment and medicines impress upon the whole pituitary membrane during mastication, and just after deglutition. And this last makes a principal part of the pleasures and pains which are usually referred to the taste. For when a person has a cold, *i.e.* when the pituitary membrane is obstructed and loaded with *mucus*, meats lose their agreeable flavours; and the same thing happens in a *polypus narium*.

Besides this, it is to be observed, that the pituitary membrane has an exquisite sensibility, which may be referred to the head of feeling. For active powders, *i.e.* sternutatories, seem to irritate the membrane of the nose in the same way, as they do a part of the skin deprived of the cuticle, only in a greater degree, and more immediately. And thus smells themselves may be referred to the head of feeling; since strong smells are often observed to occasion sneezing.

It may also be remarked, that as the organ of feeling passes insensibly into that of taste, so the organ of taste does into that of smell. And these three senses have a much greater resemblance to one another, than any of them has to the sight, or to the hearing; or than the sight and hearing have to each other. However, the organ of feeling is distinguished from that of taste by its being covered with the hard cuticle, and the organ of taste

from that of smell by the last's being extended upon bones; so as to be much more sensible and irritable upon that account. To which we may add, that as a watery fluid is the proper *menstruum* for the dissolution of sapid particles, and conveyance of their tastes, so smells seem to make their impressions by means of air-particles.

PROP. XLIX.—*To examine how far the general Phænomena of Smell are agreeable to the Doctrine of Vibrations.*

HERE we may observe, first, that since the smells of bodies diffuse themselves in general to great distances, and in some cases to immense ones, the odoriferous particles must repel each other; and consequently be easily susceptible of vibratory motions, for the same reasons as the particles of common air, or those of the æther. We may even suppose, that odoriferous particles are thrown off by vibratory motions in the body that emits them.

May not, however, the odoriferous particles be attracted by the body which emits them, after they have receded from it to a certain distance, and so follow it, in some measure, like an atmosphere? It is hard to account for the small or no diminution of weight in odoriferous bodies, after they have continued to emit smells for a long time, but upon some such supposition.

Secondly, Heat, friction, and effervescence, are all very apt to excite and increase smells; and have all a connexion with vibratory motions in the judgment of most philosophers.

Thirdly, Since heat and friction excite and increase smells, these may have some connexion with electricity; which is supposed by many philosophers to depend upon vibratory motions. And as air-particles are *electrics per se*, they may have, on this account, a peculiar fitness for conveying and impressing smells. May not air-particles, and odoriferous ones, repel each other?

Fourthly, It is usual, when we desire to receive a smell in full strength and perfection, to make quick, short, alternate inspirations and expirations. This corresponds to the rubbing the ends of the fingers upon the body to be examined by feeling, and the tongue against the palate in tasting. And all these three actions appear to be some presumption in favour of the doctrine of vibrations.

Fifthly, The greatness and quickness of the effect of odours upon the whole nervous system seem very suitable to the doctrine of vibrations. For this must be owing to the mere impression of some motion, there not being time for the absorption of particles sufficient for the effect produced. When sweet smells cause a sudden faintness, and *deliquium animi*, they may perhaps agitate the whole system of small medullary particles so much, as to make them attract each other with sufficient force to stop all vibratory motions; just as has been observed of the particles of muscular and membranous fibres. And the smells

to which a person has an antipathy, may have been originally sweet, or lie so near the confines of pleasure, as to propagate their vibrations much farther than original fœtids can. For these seem to revive from fainting by making a vigorous impression on the nose, which yet is not propagated freely over the whole system; or, if it be, will occasion immediate sickness and fainting. Fœtids in this resemble other pains, which, if moderate, excite; if very violent, overpower.

If it be objected to this, that such fragrant smells as a person has an antipathy to, are disagreeable to him in the highest degree, and that upon the first perception; also that the smell of those fœtids which revive, as of *asafoetida*, spirit of hartshorn, &c. is agreeable to many; I answer, that these two opposite changes seem to arise merely from association. The faintness and revival, attending these smells respectively, must, by association, transfer the vestiges and miniatures of themselves upon the first perception of the smells, whose associates they are.

Sixthly, It is agreeable to the notion of vibrations, that spirituous liquors and opium should produce their appropriated effects by smell, as well as by being taken into the stomach, as they are found to do in fact. For, if these effects arise from specific vibrations, the mere impression of small active particles may be sufficient for the purpose of producing them. We must, however, suppose that the exhalations of odoriferous bodies are imbibed in some small degree by the absorbing vessels of the *membrana schneideriana*. We might shew by parity of reason, that the great subtlety of *odoriferous effluvia* favours the doctrine of vibrations.

Though odoriferous particles are more subtle than the sapid ones, yet they are perhaps grosser than the rays of light. For the smoke of a tallow candle ceases to smell, when it begins to shine, *i. e.* when it is more attenuated by heat. Since therefore the vibrations from heat are probably smaller than those from light, we may range the vibrations of the medullary substance in the following order, in respect of subtlety; heat, light, smell, tastes, tangible impressions, and the vibrations of the air, from which sound arises. But it is to be observed, that these last may excite much more frequent vibrations in the auditory nerve, than those of the sounding body, to which they correspond; just as the vibrations from friction are much more numerous than the strokes of friction; and the tremors of the particles of an anvil much more numerous than the strokes of the hammer.

PROP. L.—*To examine how far the specific Differences of Odours are agreeable to the Doctrine of Vibrations.*

THIS proposition is analogous to the thirty-eighth, in which the agreement of the specific differences of tastes with the doctrine of vibrations is considered; and may be illustrated by it. One

may say indeed, that taste and smell are so nearly allied to each other, that, if one be performed by vibrations, the other must also. I will repeat two principal observations.

First, If the varieties of kind in vibrations be combined with those of degree, we shall have a large fund for explaining the various fragrant and foetid smells, notwithstanding that the first always agree in falling short of the solution of continuity, the last in going beyond it.

Secondly, the differences of kind in smells are not so many as may appear at first sight, a difference in degree often putting on the appearance of one in kind. Thus an onion cut fresh, and held close to the nose, smells very like *asafœtida*; and *asafœtida*, in an evanescent degree, like onion or garlick. Thus a dunghill at a distance has smelt like musk, and a dead dog like elder-flowers. And foetids are said to enhance the flavour of fragrances. The three last instances shew, that pleasure and pain are very nearly allied to one another in this sense also.

PROP. LI.—*To explain in what Manner, and to what Degree, pleasant and unpleasant Odours contribute, in the way of Association, to form our intellectual Pleasures and Pains.*

IT will be evident, upon a moderate attention, that the grateful smells, with which natural productions abound, have a great share in enlivening many of our ideas, and in the generation of our intellectual pleasures; which holds particularly in respect of those that arise from the view of rural objects and scenes, and from the representations of them by poetry and painting. This source of these pleasures may not indeed be easy to be traced up in all the particular cases; but that it is a source, follows necessarily from the power of association.

In like manner, the mental uneasiness, which attends shame, ideas of indecency, &c. arises, in a considerable degree, from the offensive smells of the excrementitious discharges of animal bodies. And it is remarkable in this view, that the *pudenda* are situated near the passages of the urine and *fæces*, the two most offensive of our excrements.

We may suppose the intellectual pleasures and pains, which are deducible from the flavours, grateful and ungrateful, that ascend behind the *uvula* into the nose during mastication, and just after deglutition, to have been considered in the last section under the head of taste, since these flavours are always esteemed a part of the tastes of aliments and medicines. And indeed the olfactory nerves seem to have as great a share in conveying to us both the original and derivative pleasures, which are referred to the taste, as the nerves of the tongue; which may help us to account for the largeness of those nerves in men, to whom smell, properly so called, is of far less consequence than any other of

the senses, and taste of the greatest, while yet the nerves of taste are comparatively small.

We may add here, that the smell is a guide and guard placed before the taste, as that is before the stomach, in a great degree in men, but much more so in brutes, who have scarce any other means, than that of smell, whereby to distinguish what foods are proper for them. It is likewise probable, that the smell is a guard to the lungs; and that the grateful odours of flowers, fruits, and vegetable productions, in general, are an indication of the wholesomeness of country air; as the offensiveness of putrefaction, sulphureous fumes, &c. warn us beforehand of their mischievous effects upon the lungs. However, the rule is not universal in either case.

PROP. LII.—*To give an Account of the Ideas generated by the several Odours.*

WHAT has been delivered concerning the ideas of feeling and taste, may be applied to the smell. We cannot, by the power of our will or fancy, raise up any miniatures or ideas of particular smells, so as to perceive them evidently. However, the associated circumstances seem to have some power of affecting the organ of smell, and the corresponding part of the brain, in a particular manner; whence we are prepared to receive and distinguish the several smells more readily, and more accurately, on account of the previous influence of these associated circumstances. And, conversely, the actual smells of natural bodies enable us to determine them, though we do not see them, always negatively, and often positively, *i. e.* by suggesting their names, and visible appearances. And, when we are at a loss in the last respect, the name or visible appearance of the body will immediately revive the connexion.

PROP. LIII.—*To explain the automatic Motions, which arise from the Impressions made on the Organ of Smell.*

THESE automatic motions are of three kinds; *viz.* the inspiration, by which young brute animals, especially quadrupeds, impress and increase the odours of their respective foods; the contraction of the *fauces*, and upper part of the gullet, which arises from those agreeable flavours, which ascend behind the *uvula* into the nose; and the action of sneezing.

As to the first; it is peculiar to brutes, children not using any methods of improving odours, till they are arrived at two or three years of age. The reasons of this difference may be, that the smell in many brutes is the leading sense; that their noses are long and large, and the *ossa spongiosa* hollowed by innumerable cells; whereas in young children the nose is depressed; the pituitary membrane loaded with *mucus*; and, when they grow

up, the acuteness of their smell is far inferior to that of quadrupeds.

If it be said, that this action is not automatic in brutes, but an instinct, which they bring into the world with them; I answer, that the nearness of the muscles affected, *viz.* those which dilate the nose, *larynx*, and lungs, to the seat of the impression, makes it probable, that the motion depends upon the sensation, as in other instances mentioned in these papers, some of which are allowed by all.

It may be, that something of the same kind takes place in young children, as soon as their smell begins to be sufficiently acute. But it is so mixed with, and modelled by, voluntary motions, as to be separately indiscernible.

The second motion, or the contraction of the *fauces*, and upper part of the *œsophagus*, from the grateful flavours which ascend up into the nostrils behind the *uvula*, is part of the action of deglutition; but it could not properly be mentioned in the last Section, because it arises from a sensation referred to this.

Ungrateful flavours have often a contrary effect, and extend their influence so far as to preclude the passage through the gullet, and even throw back the ungrateful liquid or morsel with violence. And we may observe, that in many other cases also, when the pleasure passes into pain, the automatic motion thereon depending passes into one of an opposite nature; just as in algebra, when an affirmative quantity in the *data* is changed into a negative one, a like change is to be made sometimes, and yet not always, in the conclusion.

It deserves notice here, that pinching the nose prevents the perception of these flavours, as it seems, by checking the vibrations, which would run along the pituitary membrane. When the flavours are very pungent, they fix in the tip of the nose; or, if this be hindered by pinching the nose, they fly to the *uvula*, which is the nearest extreme part to this.

In like manner, pinching the nose, or pressing the lachrymal bag, whose membrane is continuous to the pituitary one, checks the sensation that gives rise to sneezing. And when looking at a strong light excites this action, or acrid vapours make the eyes water, we may conjecture, that vibrations pass through the lachrymal duct from the eye to the nose in the first case, and from the nose to the eye in the last. The watering of the eyes from drinking hastily, especially pungent liquors, from plucking a hair out of the nostrils, and from sternutatories, admit of a like explication.

And these instances may help to explain the sensations in the *fauces*, *uvula*, and tip of the nose, also the flowing of tears from the eyes, which attend grief. I conjecture that the stomach is particularly affected in grief; and that it sends up vibrations along the common membrane, to the *fauces*, *uvula*, tip of the

nose, and eyes. However, the disorder of the medullary substance is great and general in great mental uneasinesses.

As to sneezing; no one can doubt its being automatic. And it is reasonable to expect, that the muscles actually concerned in it, *viz.* those of inspiration, and the erectors of the head and neck, should be affected by vivid sensations in the pituitary membrane. It seems also to me, that the muscles which stop the passage through the nose, ought to be contracted first, *i. e.* during the inspiration, as being nearer to the seat of irritation; and afterwards relaxed during expiration, partly by their having exhausted their own power, partly by the contraction of their antagonists, which are irritated also. The contrary happens, but for the same general reasons, in the action of deglutition, as has been already observed. And there is a remarkable coincidence of the efficient and final causes in both these instances.

In speaking of the sources of motory vibrations above, Prop. XVIII. I supposed, that just before the motory vibrations excited by the irritation of membranes took place, the sensory ones in them were checked by the general contraction of their fibres, in all their directions. And I mentioned sneezing, as affording an instance of this. For the sensation, which causes it, disappears the instant before the inspiration; and if this be not strong enough, *i. e.* if the muscles do not receive the vibrations from the pituitary membrane with sufficient freedom, it returns again and again, being increased by this reciprocation, till at last it causes sneezing. It seems agreeable to this account, that the passage of air, cold absolutely or relatively, through the nose, will often occasion sneezing; and through the mouth, yawning. For cold air must contract the membranes along whose surfaces it passes.

When sneezing rouses from a stupor, it may be supposed to excite the usual degree and kind of vibrations in the medullary substance of the brain, by such a moderate concussion of it, as lies within the limits of nature and health.

PROP. LIV.—*To explain the Manner and Degree, in which the automatic Actions, mentioned in the last Proposition, are influenced by voluntary and semi-voluntary Powers.*

THE short, quick, alternate inspirations and expirations, by which we distinguish smells in perfection, are in men, totally or nearly, a voluntary action, derived partly from common respiration, partly from sneezing, the prospect of pleasure and convenience concurring to it, and modelling it, as in other cases. It seems also, that in brutes this action must pass from its pure automatic state to some degree of a voluntary one.

In what manner and degree deglutition is voluntary, has been considered already.

Sneezing is checked for a time by attention, surprise, and all

strong mental emotions. It may also be performed voluntarily; but then the force is much inferior to that of automatic sneezing. The same may be observed of hiccough, coughing, yawning, stretching, &c. and is very agreeable to the derivative nature of these motions, when voluntary, *i. e.* when performed by motory vibratiuncles. The action of sneezing is differently modelled by voluntary and semi-voluntary powers in different persons.

SECT. IV.

THE SENSE OF SIGHT.

PROP. LV.—*To determine the immediate Organ of Sight, and explain its Powers in general.*

SINCE the *retina* is an expansion of the optic nerve, we may conclude, from the analogy of the other senses, that it is the immediate organ of sight. Nor is the want of sensibility in the button of the optic nerve a sufficient objection to this; as the minute structure and disposition of the parts of this button are not known.

We may also reason thus to the same purpose. It may be expected, that the immediate organ of sight should be either black or white, that so it may bear a relation of indifference to all the colours. But if we admit the doctrine of vibrations, black, by absorbing all kinds of rays, would make a confusion of vibrations, whereas white, by reflecting all, might retain the impressed vibrations distinctly. The *retina* is therefore peculiarly fitted for the immediate organ of sight, and the *choroides* the contrary. We may add farther, that the *retina*, by reflecting rays copiously, prevents their arrival at the *choroides*.

For the accurate distinction of the several visible points of objects, it is necessary that these be placed within the limits of distinct vision; and also, that the coats and humours of the eye be so circumstanced, as to bring the several pencils of rays, which proceed from each visible point accurately or nearly, to a corresponding point upon the *retina*. This is distinct vision. But colours alone may be distinguished from each other without any exact conformation of the eye. Thus vision may be reckoned of two kinds, as feeling, taste, and smell, have been.

PROP. LVI.—*To examine how far the Phenomena of Colours are agreeable to the Doctrine of Vibrations.*

HERE I will make two suppositions.

First, That the extreme red rays at *FM*, Optics, book I. part 2. fig. 4. excite vibrations in the *retina*, which are to those excited by the extreme violet rays at *AG*, as 1 to 2, in respect of frequency.

Secondly, That in going from the extreme red to the extreme violet, the excess of vibrations excited by each colour, above those of the extreme red, will be proportional to its distance from the extreme red.

If we admit these two suppositions, then the vibrations excited by the extreme red, by the limit of red and orange, of orange and yellow, yellow and green, green and blue, blue and indigo, indigo and violet, and by the extreme violet, as these colours are fixed by Sir Isaac Newton, will be to one another in frequency, respectively as the 8 numbers 100, $112\frac{1}{2}$, 120, $133\frac{1}{3}$, 150, $166\frac{2}{3}$, $177\frac{2}{3}$, and 200; the distances of these several limits, and of the extreme violet, from the extreme red, being to one another respectively, as the 7 numbers $12\frac{1}{2}$, 20, $33\frac{1}{3}$, 50, $66\frac{2}{3}$, $77\frac{2}{3}$, and 100.

Now the first suppositions may be rendered probable thus. The intervals of the fits of easy reflection and transmission of the red and violet in the same medium, and same angle of refraction, are nearly as 5 to 3. See Optics, book II. Obs. 13, 14, and Prop. XVI. But the red is less refracted by the coats and humours of the eye than the violet, and consequently will not have its intervals so much diminished in proportion; whence they may be to those of the violet as 6 to 3, or 2 to 1, at their arrival on the *retina*. But it is probable, that the vibrations of the rays themselves, and consequently those which they excite in the *retina*, are reciprocally as the intervals of their fits. The frequency therefore of the vibrations excited by the extreme red may be to that of the vibrations excited by the extreme violet as 1 to 2, according to the first supposition.

The second supposition is an easy step after the first.

For it is natural to suppose, that in passing from *F* to *A*, in the figure above referred to, equal distances should produce an equal increase of vibrations, which is the second supposition.

Upon this foundation we may now reason in the following manner.

First, The seven primary colours, estimated both from their limits, and their middle points, excite vibrations, which are to each other in the simplest ratios that are consistent with each other, and all comprehended within the first and most simple of all ratios, *viz.* that expressed by the two first numbers 1 and 2.

Secondly, The same ratios are also those of the five tones, and two semi-tones, comprehended within the octave; as might well

be expected. For music must take those which are most simple, and most consistent with each other.

Thirdly, Since the greens are respectively to the yellows, on one hand, as 9 to 8, and to the blues on the other, as 9 to 10, *i. e.* in the proportion of a tone; also to the reds, on one hand, as 4 to 3, and to the violets, on the other, as 3 to 4, *i. e.* in the proportion of a 4th; since farther, the yellows are as 6 to 5, *i. e.* thirds minor, to the reds, as 4 to 5, *i. e.* thirds major, to the blues, and as 2 to 3, *i. e.* fifths, to the violets; the blues as 5 to 6, *i. e.* thirds minor, to the violets, and as 3 to 2, *i. e.* fifths, to the reds; and the reds as 9 to 16, *i. e.* flat sevenths, to the violets; the difference of vibrations here exhibited may make the five foregoing colours appear distinct from each other to the mind, for the same reasons, whatever they be, as take place in sounds. For natural bodies reflect all these colours in great abundance, and in sufficient purity for this purpose. We may begin from green, as the most common of all. When this, as reflected by grass, suppose, has been sufficiently familiarized to the eye of a child, it is reasonable to think, that it may be distinguished from yellow and blue, and much more from red and violet, as reflected by flowers; also that these may be distinguished from each other. And it seems to me, that our fixed point ought to be placed in green, from the commonness and purity of the green of the third order, *i. e.* of grass and vegetables in general. For the same reasons one may expect, that the several shades of red, orange, green, blue, and violet, should be considered as several degrees of the same colour, *viz.* on account of the small difference of vibrations. At least this corresponds to the usual method of proceeding in other things. We distinguish great differences in our sensations by new names; but refer all such as are nearly related to the same. And thus the two foregoing suppositions furnish us with a natural reason for distinguishing the primary colours into five, *viz.* red, yellow, green, blue, and violet; which, agreeably to this, were all that Sir Isaac Newton himself distinguished the oblong solar image into for some time, as may appear by his optical lectures.

Fourthly, Since, if we proceed from the green to the yellow and red, on one hand, and to the blue and violet on the other, the ratios are the same, only inverted; and since there is a larger interval or ratio between the yellow and red, also between the blue and violet, than between the green and yellow, or green and blue; we may expect to have two more distinct primary colours corresponding to each other, and to the two semi-tones in an octave. And thus it is. Orange, and indigo, are sufficiently distinct from their contiguous ones, *viz.* orange from red and yellow, and indigo from blue and violet; and yet approach to them. And these seven colours, thus fixed, seem to be all that we can well call distinct colours amongst the primary ones, the intermediate degrees being referred to some of these seven, and

called shades. Of compound colours, distinct from all the primary ones, I shall speak below.

Fifthly, It is remarkable here, that the order of the five tones and two semi-tones of an octave, which corresponds to the order of the seven primary colours, is the second in absolute perfection (which I have from a MS. paper of Sir Isaac Newton's on music, not yet published), and the first in relative, *i. e.* of those, in which the semi-tones are at equal distances from the middle or extremes; which circumstance is evidently necessary in the order of the colours. For if distinct colours arise from ratios, and a half-note colour arise next after the red, if you begin at one end, a corresponding one ought to appear next after the violet, if you begin at the other. The sameness of the ratios that must arise, makes this necessary, on supposition, that the distinction of colours is founded on ratios.

Sixthly, If the distinction of colours arise from the ratios of vibrations, the colours may be expected to be broader where the vibrations are more numerous, because a greater addition must be made to a greater number, in order to make an equal ratio. And there is a certain breadth for each of the colours respectively, which suits each set of ratios of vibrations that they can be supposed to bear to one another, according to any supposed law of increase of the vibrations in passing from one end of the solar image to the other. Since therefore the breadth of the seven primary colours, as determined by Sir Isaac Newton, suits the simplest ratios possible, according to the simplest law of increase possible, as has been explained above, we seem to have from thence an argument both for the doctrine of vibrations in general, and for the particular ratios of vibrations here alleged. And there are two things in this matter which deserve particular notice. First, that Sir Isaac Newton's *Spectrum* was about ten inches long; and consequently, the breadths of the seven primary colours, red, orange, yellow, green, blue, indigo, violet, in inches, 1.25; 0.75; 1.33; 1.66; 1.66; 1.11; 2.22; which magnitudes are so considerable, that a small error in fixing the limit of a colour does not much affect their mutual ratios. Secondly, that the limits of the colours were determined in a way, that had no dependence on any hypothesis, and the operation repeated several times. However, it may perhaps be worth the time and pains of some curious experimenter, to examine the breadths of the seven primary colours afresh, and compare them with the hypothesis here proposed.

Seventhly, When all the rays reflected from any natural body are near to each other, as in the yellows of the second order, and in the blues and greens of the third, we may suppose, that the slower vibrations are accelerated by the quicker, and the quicker retarded by the slower, so as to compose an intermediate colour, scarce differing from homogeneous light in appearance of purity; just as in a bell, the slower vibrations of the wider part, and the

quicker of the narrower, overrule each other mutually, so as to compose one tone. But when the vibrations of the extreme rays are greatly different from each other, it seems that each ought to keep the power of exciting its proper vibrations, so as to make the colour of the middle rays; which may be considered as a kind of centre of gravity, a dilute one, verging to white. And white itself, when in perfection, arises from a due proportion of all the sorts of rays, each primary colour, perhaps, keeping its own peculiar vibrations, and the several shades of each primary colour vibrating in the same time as the middle point. When two colours considerably different, as red and blue, yellow and violet, red and violet, are compounded, they neither resemble the intermediate homogeneous one, nor make a white. Not the first, because they are at so great a distance, that each can keep its own vibrations, contrary to what happens in colours resembling homogeneous ones; not a white, because there is not a sufficient number of differing vibrations. By such compositions it is, that purples, and other colours, different from all the homogeneous ones, are formed; and whoever considers the several shades of each colour, with the mutual proportions which may be combined in any compound, may easily conceive how all the colours of natural bodies should arise from mere combinations of the primary colours, agreeably to the sixth and seventh propositions, of the second part of the first book of Sir Isaac Newton's Optics. What is here delivered may serve to suit the doctrine of vibrations to those propositions, and, perhaps, assist the reader to see the reasons of the sixth.

COR. If the differences of the primary colours arise from the specific differences of vibrations, it is easy to see, that the differences of tastes and smells may have a like origin; and *vice versâ*.

PROP. LVII.—*To examine how far luminous Appearances, not occasioned by the Impression of the Rays of Light, with some other Phænomena of a related Kind, are agreeable to the Doctrine of Vibrations.*

FLASHES of light, and other luminous appearances, are occasioned by strokes upon the eye, rubbing it, faintings, &c. Now it is very easy to conceive, that violent agitations in the small particles of the optic nerve should arise from these causes; and consequently that such deceptions of the sight, as one may call them, should be produced, if we admit the doctrine of vibrations. And I do not see how they follow from the common hypothesis concerning the manner of sensation.

The most remarkable of these luminous appearances is that which resembles the eye of a peacock's feather, and which offers itself upon shutting and rubbing the eye in a morning. There is a distinction in it between the central parts and the edges. The first seems to answer to that part of the *retina*, which is opposite

to the pupil, and of about the same size with it, in its ordinary dimensions. The last, or the edges, may answer to those parts of the *retina*, which are only sometimes exposed to the action of light, *viz.* in dilatations of the pupil. It is observable, that the central parts are often dark, while the edges are luminous; and *vice versâ*. It happens also frequently, that in the whole appearance a blue, a dilute yellow, and a red, succeed each other in the order of the colours. Perhaps, by farther observations, a person might be able, in some measure, to predict the variations of this phænomenon. It generally moves, which may be perhaps from the motion of the peculiar vibrations along the surface of the *retina*.

Upon shutting one's eyes after they have been fixed upon a luminous object, as a candle, a fire, a window, it is common to have a faint image of the object remain in the eye for a few moments. This follows from the gradual declension of the vibrations excited.

Sometimes, instead of a luminous image, a dark one, corresponding in shape and size to the luminous object, presents itself. In this case we must suppose, that the vivid vibrations excited by the luminous object pass immediately into very feeble ones, absolutely or relatively, upon the cessation of the impression.

Boerhaave says, that he had a luminous circle in his eye for a long time after having viewed too intensely the moon's light collected to a *focus*. And looking at the sun makes other objects appear red and luminous. It does also occasion dark spots to appear upon common objects afterwards. This last effect may perhaps succeed the first. While extraordinary vibrations, or a disposition to them, continue in the *retina*, and optic nerve (which may be for a longer time, if a slight inflammation, with the consequent irritability, be produced in the small vessels of the nervous capillaments), the common objects may appear luminous. When these go off, a contrary state may take place, and cause the dark spots to appear. Dark spots of continuance argue, that an injury is done to the *retina*, and optic nerve. The permanent dark spots, which are sometimes previous to a *gutta serena*, seem to be of this kind.

It is agreeable to some of the foregoing instances, that being kept much in the dark should enable the persons to see with a very obscure light. In some other cases of a *nyctalopia* there may perhaps be the first and lowest degree of inflammation in the infinitesimal vessels of the *retina*, so as to increase the sensibility of the organ without making the exercise of its functions painful.

Giddiness, or an apparent irregular motion in the objects of sight, almost always goes before any general confusion and privation of sense and motion; which is very agreeable to the doctrine of vibrations. For the general disorder in the vibrations in the medullary substance may be expected to be perceived in the optic nerve, and corresponding part of the brain, first and chiefly, on

account of the acuteness and precision of the sense of sight. Upon the same principles it is easy to see, how great and unusual agitations of the body, impressions on the stomach, on the olfactory nerves, on the eye, by the quick transition of objects, on the eye and fancy together, by looking down a precipice, &c. should occasion a temporary giddiness.

PROP. LVIII.—*To examine how far the Judgments which we make by Sight concerning Magnitude, Distance, Motion, Figure, and Position, are agreeable to the Doctrine of Association.*

I HAVE already observed, Prop. XXX. that these judgments are to be esteemed true or false, according as they agree or disagree with those made by the touch.

Now the associates of greater tangible magnitude are a larger picture on the *retina*, the distance being the same; and a larger distance, the picture being the same. The associates of a less tangible magnitude are the opposites to these. And the associates of the sameness of tangible magnitude are the increase or diminution of the picture on the *retina*, while the distance is diminished or increased suitably thereto. All this appears from optical considerations. Hence it follows, that where the picture on the *retina* is of a just size, and also the previous judgment concerning the distance just, our estimate of tangible magnitude by sight will be just likewise. But if the picture on the *retina* be magnified or diminished by glasses, or our previous judgment concerning the distance be erroneous, our estimate of tangible magnitude will be erroneous in like manner. And whether it be just or erroneous, it is entirely founded on association.

The following instances, among many others, confirm these positions. Young children judge rightly of magnitude only in familiar places, or at small distances. At great distances they always judge the objects to be less than the truth, not having learnt to judge rightly of these distances, and make allowance for them. The generality of adults judge far better of magnitude at great distances on level ground, than from above, or from below, on account of their greater experience in the former case. The horizontal moon appears larger than the meridional, because the picture on the *retina* is of nearly the same size, and the distance esteemed to be greater. And yet the horizontal moon appears far less than the truth, because we can form no conception of its vast distance. A tree referred to the horizon in the dusk of the evening, or a fly to the ground at a distance, through the indistinctness of vision, appears much bigger than the truth. In looking through glasses, which magnify or diminish the picture on the *retina*, the objects themselves seem to be magnified or diminished, because our judgment concerning the distance is not altered proportionally, &c. &c.

There are, besides these, some other associated circumstances,

which occasionally impose upon us in estimating magnitudes. Thus a person of an ordinary height standing very near a very tall one, or coming in at a very high door, appears shorter than the truth; lean persons seem tall, fat persons short, &c.

The principal criterion of distance is the magnitude of the picture, which some known object makes on the *retina*. But the five following associated circumstances seem to have also some influence on our judgments concerning distance, in certain cases, and under certain limitations: the number of objects which intervene, the degree of distinctness in which the minute parts are seen, the degree of brightness, the inclination of the optic axes, and the conformation of the eye. It will appear from the sixty-second and sixty-third propositions that the two last are associates to each other in their proper degrees, since each depends on the distance of the object. The influence of the three first, as well as that of the magnitude of the picture on the *retina*, is evident from the methods of expressing distance in pictures.

From the principles laid down in the last paragraph, we may explain the following fallacies in vision. An object viewed through a perspective appears to be nearer than it is, because the picture on the *retina* is thereby rendered both larger, and more distinct; but if we invert the perspective, and so diminish the picture, the object will appear farther off. At sea, and on plains, where few or no objects intervene, we judge the distances to be less than the truth; and the contrary happens in scenes diversified with a proper variety of objects. A large object, when apprehended to be one of a common size, appears nearer than the truth; and the same happens, when we view objects in rural scenes, such as houses, towns, hills, &c. in a bright light, or through a very clear atmosphere. In trying to judge of small distances by one eye, it is usual to be mistaken for want of the criterion from the inclination of the optic axes.

Since our judgment concerning the magnitude of an unknown object depends upon the distance, and our judgment concerning the distance of every object chiefly upon that concerning its magnitude, the conjectures of different persons, concerning the magnitudes and distances of unknown remote objects, both as seen through telescopes, and with the naked eye, may vary considerably from each other, according to their respective associated prejudices. If the distance be fixed previously by a known object, we may afterwards judge of the magnitude of an unknown object thereby. The number of intervening objects, and the inclination of the optic axes, seem to afford considerable assistance in determining distances, where known objects are wanting; the first in large distances, the last in small ones: but the other three inferior criteria above-mentioned, *viz.* the degree of distinctness, the degree of brightness, and the conformation of the eye, when singly taken, are of small signification.

We judge of motion by the motion of the pictures on the

retina, or of our eyes in following the objects. After some time, we learn to make allowance for the line of direction, our own motions, &c. If we fail to make the due allowance through associated circumstances of any kind, we must, in consequence of this, make a disproportionate estimate of motion, or place it in an undue object.

We judge of the figure or shape of bodies, chiefly by the variations of light and shade; and our associations taken thence are so strong, as that we are easily imposed upon by a just imitation of the light and shades belonging to each shape and figure, in their several situations with respect to the quarter from which the illumination proceeds.

It is from the associations, considered under this proposition, and particularly in the last paragraph, that painting conveys such exact ideas of shapes, figures, magnitudes, and distances, and the *camera obscura* of motions also, by means of impressions that proceed from a plane surface.

The position of objects is judged of entirely by the part of the *retina* on which the rays fall, if we be in an erect posture ourselves. If we be not, we allow for our deviation from it, or make a reference to something judged to be in an erect posture. If we fail in these, errors concerning the position of visible objects must happen. Our calling bodies *erect*, when the rays proceeding from their tops fall upon the lower parts of the *retina*, and *vice versá*, is merely from an association of the same kind with those by which the senses of other words are determined.

Those who are disposed to examine the subjects of this and the following proposition with accuracy, may see a large variety of proper instances well explained by Dr. Smith, and Dr. Jurin, in Dr. Smith's *Optics*. These gentlemen insist chiefly on optical considerations; but they every where admit the prevalence of association, though it is not always to their purpose to take express notice of it.

I will just remind the reader, that in all the cases of magnitude, distance, motion, figure, and position, the visible idea is so much more vivid and ready than the tangible one, as to prevail over it, notwithstanding that our information from feeling is more precise than that from sight, and the test of its truth. However, if we could suppose a person to be endued with the senses of seeing and hearing, and yet to be destitute of that of feeling, and of the power of moving himself, he might have all the words expressing distances, magnitudes, &c. so much, and so properly, associated with the visible appearances of these, as that, by passing over his ear, they would raise up all the same trains of visible ideas, as in us.

PROP. LIX.—*To examine how far the Circumstances of single and double Vision are agreeable to the Doctrine of Association.*

WHEN we have attained a voluntary power over the external motions of our eyes, so as to direct them to objects at pleasure, we always do it in such a manner, as that the same points of objects fall upon correspondent points of the two *retinas*. And this correspondence between the respective points of the *retinas* is permanent and invariable. Thus the central points, or those where the optic axes terminate, always correspond; a certain point on the right side of the right *retina* always corresponds (whatever object we view) to another certain point on the right side of the left *retina*, equally distant from the centre with it, &c. Hence if the optic axes be directed to the object *A*, the picture made by it on the right *retina* corresponds to that made on the left; whereas the impressions made by two similar objects, *A* and *B* upon the two *retinas*, do not correspond. The impressions, therefore, that are made upon portions of the *retinas*, which do or do not correspond, are the associated criterions of single and double vision. For I here suppose, that the common appearances of a single object, and two similar ones, are respectively called single and double vision.

Let us now inquire into the fallacies which these associated criterions may occasion.

First, then, When a person directs his eyes by a voluntary power to a point nearer or farther off than the object which he views, so as to make the pictures of the object fall upon the points of the two *retinas*, that do not correspond, this object will appear double. The same thing happens when one eye is distorted by a spasm, when persons lose the voluntary power of directing their optic axes to objects, and in general whenever the pictures, which the object imprints on the two *retinas*, fall upon points that do not correspond.

It resembles this, and illustrates it, that if we cross the fingers, and roll a pea between two sides, which are not contiguous naturally, it feels like two peas.

Secondly, After a person, whose eye is distorted by a spasm, has seen double for a certain time, this ceases, and he gains the power of seeing single again, provided the distortion remain fixed to a certain degree. For the association between the points of the two *retinas*, which corresponded formerly, grows weaker by degrees; a new one also between points, that now correspond, takes place, and grows stronger perpetually.

Thirdly, If two lighted candles, of equal height, be viewed at the distance of two or three feet from the eyes, so that the picture of the right-hand candle on the left *retina* shall correspond to that of the left-hand candle on the right *retina*, only one image will be produced by these two corresponding pictures. But the two pictures which do not correspond, *viz.* that of the

right-hand candle on the right *retina*, and that of the left-hand candle on the left *retina*, will each produce its proper image. See Smith's Optics, Rem. 526.

But here two questions may be asked; First, Why single objects appear the same to one as to both eyes, allowing for the diminution of brightness, since, in the first case, there is one picture only, in the last two. Ought not every single object to appear single to one eye, and double to both?

Secondly, How can one object appear like two to both eyes, since, however the eyes be directed or distorted, it can make but two pictures, whereas two objects make four, *viz.* two in each eye?

It is evident, that the difficulty is the same in both these questions. And it seems to be a sufficient answer to allege, that impressions so much alike, and which are so constantly made together, as those upon the corresponding portions of the two *retinas*, must unite into one entirely in the brain, and produce the same effect in kind, though somewhat different in degree, as one alone. And thus whether we see with one eye or both, hear with one ear or both, the impression, on the common sensory in the brain is the same in kind; and therefore, if the first be called single, the other must also.

But it deserves particular attention here, that the optic nerves of men, and such other animals as look the same way with both eyes, unite in the *sella turcica* in a *ganglion*, or little brain, as one may call it, peculiar to themselves; and that the associations between synchronous impressions on the two *retinas* must be made sooner, and cemented stronger, on this account; also that they ought to have a much greater power over one another's images, than in any other part of the body. And thus an impression made on the right eye alone by a single object may propagate itself into the left, and there raise up an image almost equal in vividness to itself: and consequently, when we see with one eye only, we may, however, have pictures in both eyes; and when we see a single object, with our eyes directed to one at a different distance, we may have four pictures, *viz.* two from direct impression in parts that do not correspond, and two others from association in parts that do. And thus both the foregoing questions may be answered, in a manner that leaves no doubt or hesitation.

PROP. LX.—*To explain in what Manner and to what Degree, agreeable and disagreeable Impressions on the Eye contribute, in the Way of Association, to form our intellectual Pleasures and Pains.*

IT is evident, that gay colours, of all kinds, are a principal source of pleasure to young children; and they seem to strike them more particularly, when mixed together in various ways.

Whether there be any thing in colours, which corresponds to the harmony between sounds, may be doubted. If there be, it must, however, admit of much greater latitude than the harmony between sounds, since all mixtures and degrees of colours, unless where the quantity of light overpowers the eye, are pleasant; however one colour may be more so originally than another. Black appears to be originally disagreeable to the eyes of children; it becomes disagreeable also very early from associated influences. In adults, the pleasures of mere colours are very languid in comparison of their present aggregates of pleasure, formed by association. And thus the eye approaches more and more, as we advance in spirituality and perfection, to an inlet for mental pleasure, and an organ suited to the exigencies of a being, whose happiness consists in the improvement of his understanding and affections. However, the original pleasures of mere colours remain, in a small degree, to the last, and those transferred upon them by association with other pleasures (for the influence is in these things reciprocal, without limits) in a considerable one. So that our intellectual pleasures are not only at first generated, but afterwards supported and recruited, in part, from the pleasures affecting the eye; which holds particularly in respect of the pleasures afforded by the beauties of nature, and by the imitations of them, which the arts of poetry and painting furnish us with. And for the same reasons the disagreeable impressions on the eye have some small share in generating and feeding intellectual pains.

It deserves notice here, that green, which is the colour that abounds far more than any other, is the middle one among the primary colours, and the most universally and permanently agreeable to the eye of any other; also, that as the common juice of vegetables is in general green, so that of animals is in general red; the first being, perhaps, of the third order, the last of the second. It appears to be extremely worth the time and pains of philosophers to inquire into the orders of the colours of natural bodies, in the manner proposed and begun by Sir Isaac Newton; and particularly to compare the changes of colour, which turn up in chemical operations, with the other changes which happen to the subjects of the operations at the same time. Nothing seems more likely than this to be a key to the philosophy of the small parts of natural bodies, and of their mutual influences.

PROP. LXI.—*To give an Account of the Ideas generated by visible Impressions.*

HERE we may make the following observations:

First, that the ideas of this sense are far more vivid and definite than those of any other; agreeably to which, the word *idea* denoted these alone in its original and most peculiar sense.

Hence it is proper to make the strictest examination into the ideas of this sense, and their properties, since it is probable, from the analogies every where conspicuous in natural things, that these are patterns of all the rest. Their peculiar vividness and precision may therefore be considered as serving like a microscope in respect of other ideas, *i. e.* as magnifying their properties.

Secondly, The vividness and precision here spoken of relate chiefly to distance, magnitude, motion, figure, and position, *i. e.* to the things considered in the fifty-eighth proposition. However, colours leave distinct ideas of themselves; but then they require an exertion of our voluntary powers for the most part, whereas the ideas of distances, magnitudes, &c. recur incessantly in the trains which pass over the fancy.

Thirdly, The peculiar vividness and precision of visible ideas may probably be owing to the following causes, as well as to some peculiar unknown structure of the optic nerve, and corresponding region of the brain; *viz.* the perpetual recurrency of visible objects, either the same or similar ones, during the whole time that we are awake; the distinct manner in which they are impressed by means of the several proper conformations of the eye; and their being received in general upon the same part of the *retina*, precisely or nearly. For, when we view any object with attention, we make the central point of it fall upon the central part of the *retina*. Farther, as the optic nerve sends off no branches, but is spent wholly upon the *retina*, this may perhaps contribute in some degree. And these considerations may a little help us to conceive, how the optic nerve, and corresponding region of the brain, may be the repository of such an immense variety of visible ideas, as they are in fact.

Fourthly, The idea of every familiar object has, for the most part, some particular magnitude, position, and aggregate of associates, in its recurrences to the mind. And this somewhat lessens the difficulty mentioned in the last paragraph. The reason of this fourth observation is, that though every visible object appears under different magnitudes, in different positions, and with different associates, yet these differences destroy one another, so that the strongest particularity only remains. However, changes are made from time to time, each subsisting for a short period, and then giving way to the next in succession.

Fifthly, We have fictitious visible ideas of places and persons that we have never seen, as well as of those which we have. These are derived from association evidently, and they often undergo successive changes, like those spoken of in the last paragraph.

Sixthly, Our visible ideas are subject to the voluntary power in a high degree, and may be called up by the slightest associated circumstance, at the same time that they have very numerous connexions with other ideas, and with actual im-

pressions. The name, or its idea in the region of the brain corresponding to the ear, are the circumstances most commonly made use of for calling up visible ideas. But there are many ideas, *i. e.* internal feelings, which have no names, and which yet, by attending our several visible ideas, get this power of introducing them.

Here it is to be observed, that an idea cannot be said to be voluntarily introduced, till it be previously determined by some of its associates. If I desire to introduce a visible idea of any kind, an *individuum vagum*, and that of a horse offers itself, it was not owing to the command of my will, that it was a horse, and nothing else, but to the connexion which the idea of a horse had with some other idea or impression, which then happened to take place. But if I desire to recollect the features of a person's face, whom I saw yesterday, I make use of his name, his dress, the place in which I saw him, or some other associated circumstance, for this purpose. And this may be called a voluntary introduction of an idea. However, the introduction of the idea of a horse, in the circumstances just described, might be termed voluntary in a different sense, if any person thought fit to denominate it so, on account of the command of the will to introduce some idea. My design here is, only to suggest to the reader the processes generally made use of in these things. It is to be observed farther, that the associated circumstance, which determines what idea shall be called up voluntarily, does, for the most part, raise it. Thus, if a person desire me to call up the idea of a horse, the very sound of the word proceeding from his mouth will do it, for the most part, immediately. If not, I go back, by my memory, to the trace left by the word, and thence to the idea, or to some common associate of both the word and idea, capable of raising the last.

Seventhly, When we have conversed much with the same visible objects, as after having been in a crowd, travelling, &c. for many hours without intermission, we may find the ideas of these objects peculiarly strong, so as to intrude upon our fancies, and interfere with all our other ideas. This may serve to shew, that the permanence of the sensations impressed, mentioned in the third proposition, and which shews itself particularly in visible impressions, as there remarked, is of the nature of an idea. And it coincides remarkably with this, that the ideas should be peculiarly vivid and precise in the same sense, where the permanency of the sensation impressed is most conspicuous.

Eighthly, The ideas of sight and hearing, and the impressions from whence they proceed, have a peculiar connexion with each other. For as words pronounced call up visible ideas, so visible ideas and objects call up the ideas of words, and the actions by which they are pronounced.

Ninthly, The trains of visible ideas are in a particular manner affected by the general states of the brain, as may appear from

the trains which present themselves in madness, phrensies, and common deliriums. This agrees remarkably with what has been already observed concerning the ideas of this sense; and we may infer from all together, that the regions of the brain corresponding to the optic nerve are comparatively large, or peculiarly susceptible of impressions, or both.

Tenthly, The imagery of the eye sympathizes also remarkably with the affections of the stomach. Thus the grateful impressions of opium upon the stomach raise up the ideas of gay colours, and transporting scenes, in the eye; and spasms, and indigestions, have often a contrary effect. The ghastly faces which sometimes appear in idea, particularly after drinking tea, seem to be an effect of this kind, or perhaps of the last-mentioned one; for they are common to persons of irritable nervous systems. Ghastly faces may take place preferably to other disagreeable ideas, perhaps because characters, affections, passions, are principally denoted and expressed by the countenance; because faces are the most common of visible objects, and attended to with the greatest earnestness; because we criticize much upon the beauty of faces, and upon the proportion of the several features to each other; and because evil spirits (the notions of which generally take strong and early possession of our fancies) are painted with ghastly faces. This mixture of reasons hinders each particular one from being so obvious, as might otherwise be expected; however, the same thing is common in many other cases. The trains of visible ideas, which occur in dreams, are deducible, partly from the sympathy here mentioned, partly from that of the last paragraph.

Eleventhly, Our stock of visible ideas may be considered as a key to a great part in our knowledge, and a principal source of invention in poetry, painting, mathematics, mechanics, and almost every other branch of the arts and sciences. In mathematics and mechanics the invention of the diagram is, in effect, the solution of the problem. Our memories are also much assisted by our visible ideas in respect of past facts, and the preservation of the order of time depends in a particular manner upon our visible trains suggesting each other in due succession. Hence eye-witnesses generally relate in order of time, without any express design of doing so. This recollection of visible ideas, in the order in which they were impressed, gives rise to the *loci memoriales*, in which matters principally worthy of remembrance are to be repositied, and to the artificial memory, that is borrowed from the eye; just as the facility of remembering words formed into verses does to the artificial memory borrowed from the ear. It may deserve notice here, that some persons have imaginary places for the natural numbers, as far as 100, or farther.

Twelfthly, The ideas which different persons have of the same persons' faces, though they be very like one another, cannot yet be precisely the same, on account of the addition and omission

of little circumstances, and a variety of associated ones, which intermix themselves here. Hence the same picture may appear much more like to one person than to another, *viz.* according as it resembles his idea more or less.

Thirteenthly, Painters, statuaries, anatomists, architects, &c. see at once what is intended by a picture, draught, &c. from the perfection of their visible ideas; and carry off the scene, plan, &c. in their memories, with quickness and facility. All which is still owing to association. But it would be endless to enumerate the instances of associations which this sense affords.

Fourteenthly, It is probable, that fables, parables, similes, allegory, &c. please, strike, and instruct, chiefly on account of the visible imagery which they raise up in the fancy. They are also much more easily remembered on the same account. We may add, that idolatry, heathenish and popish, has made a much quicker and more extensive progress in the world on account of the stability and vividness of visible impressions and ideas, and the difficulty, obscurity, and changeable nature, of abstract notions. And image worship seems even to have been derived in great measure from this source.

Fifteenthly, It would be a matter of great curiosity and use (as far as these speculations can be of any use) to inquire carefully into the progress of the mind, and particularly the fancy, in persons born blind, and compare the result with what is advanced under this proposition, and with other parts of these papers, in order to correct and improve the theory of association thereby. It is probable, that they are considerable losers, upon the whole, in respect of knowledge; though their greater degree of attention, and the superior acuteness of the senses of feeling and hearing, and, consequently, perfection of the ideas of these senses, must give them some particular advantages.

PROP. LXII. — *To explain the automatic Motions which are excited by Impressions made on the Eye.*

THESE motions are of two kinds, external and internal. The external are the motions of the globe of the eye, those of the eyelids, and the contractions of the lacrymal, and other neighbouring glands, whereby they are evacuated. The internal are the contractions of the greater and lesser muscular rings of the *iris*, of the radiated fibres of the *iris*, and of the ciliar ligaments. I will speak of each of these in order.

I begin with the motions of the globe of the eye. And here I observe, first, that the white tendinous expansions of the four straight muscles reach as far as the *cornea*; and consequently, that they are thereby exposed in a particular manner to the action of light, when the eye is open, being covered with nothing but a thin membrane. However, the tendinous expansions of the *adducens* and *abducens* are much more exposed than those of the

attollens and *deprimens*; and if the eye be but a little open, the light cannot fall upon these last at all.

Secondly, If a luminous object be placed upon the right side, so as that the light shall fall in a particular manner upon the tendinous expansion of the *abducens* of the right eye, and of the *adducens* of the left, it may by contracting these muscles make the eyes move in a congruous manner, turning them towards itself; and the tendency of the eyes to move towards the right side ought not to cease, till the *adducens* and *abducens* in each eye have an equal quantity of light fall upon them from the luminous object, *i. e.* till the optic axis be directed to it. In which case the eyes would be *in æquilibrio*, as far as they are under the influence of the light which falls upon the tendinous expansions of the straight muscles.

Thirdly, It agrees remarkably with the two last paragraphs, that new-born children move their eyes in a congruous manner; that the motions are chiefly to the right and left, scarce upwards and downwards at all, the eyelids being seldom so much opened as to expose the tendinous expansions of the *attollens* and *deprimens*; and that their eyes are frequently turned towards luminous objects, such as a candle, or a window.

Fourthly, But it is not necessary, that the eyes of new-born children should always turn to the luminous object, or remain fixed upon it. For every muscle, when it has exhausted itself by contraction, gives place to its antagonist of course. If therefore the luminous object be much on one side, the eyes ought to turn back from it almost immediately. To which we may add, that various luminous objects generally affect the eyes at the same time; that the four straight muscles do naturally balance each other, and keep the eyes in a right forward position; and that the oblique muscles scarce favour any particular oblique position, though they do prepare the eye to turn with greater facility, in compliance with the contraction of any one of the four straight muscles. There are therefore sufficient sources for a variety of motions in the globes of the eyes, without destroying their congruity.

Fifthly, It is worthy of attention here, that the *attollentes* and *deprimentes* do not want the same external influence of light to make them move in a congruous manner, as the *adducentes* and *abducetes*; inasmuch as one *adducens*, and one *abducens*, must act together to make the eyes move congruously to the right and left; whereas the two *attollentes*, and two *deprimentes*, act together in the congruous motions upwards and downwards. As far therefore as the nerves of one side sympathize with the corresponding nerves of the other in the influences which descend from the brain, there will be a natural tendency in the eyes to move upwards and downwards in a congruous manner, and to the right and left in an incongruous one. And this suits well with the greater exposition of the tendinous expansions of the

adducentes and *abducentes*, before taken notice of. For what reason so many pairs of nerves are concerned in the motions of the globe of the eye, and of the eyelid, remains to be inquired.

Sixthly, It may perhaps be, that the light which passes in at the pupil has some efficacy in moving the globe of the eye, either by unknown communications in the brain between the optic nerve, and the third, fourth, and sixth pairs, or perhaps by penetrating in a small degree through the *retina*, *choroides*, and *sclerotica*, to the four straight muscles. If this last influence could be allowed, it would oppose that exerted upon the tendinous expansions; but would, however, join with it in preserving the congruity of the motions.

Seventhly, As the two oblique muscles neither have tendinous expansions exposed to the light, nor adhere to the globe of the eye, except just at their insertion, they cannot be under either of the influences here supposed to affect the straight muscles, but must be subject chiefly to those which descend from the brain; thus acting almost uniformly, unless in particular agitations of the whole nervous system. And this agrees well with the fact, and with the uses generally assigned to these muscles, *viz.* those of keeping the eye in a moderate suspension always, and drawing it out on eminent occasions.

Eighthly, The circumstances which occasion squinting in young children, agree well with the theory here proposed. Thus, if a child be laid so into his cradle, as that one eye shall be covered, the external influences of light cannot operate upon it. And if this be often repeated, especially while the association which confirms the congruity of the motions is weak, the eye which is covered will obey the influences which descend from the brain, and turn upwards and inwards for the most part. What turns the scale in favour of this position, remains to be inquired.

The second of the external motions is that of the eyelids, or the actions of the *elevator*, and *orbicularis palpebrarum*. What excites the first to constant action during the whole time that the new-born child is awake, is difficult to say. Perhaps the action of light upon the white of the eye, sending vibrations under the upper eyelid, and thence into the fibres of the *elevator*: or the direct action of light through the skin; for it is a cutaneous muscle: or influences which descend into the third pair from the second, *i. e.* the optic nerve: or the friction from the globe of the eye in its motions, which may also make the eyelid sympathize in motion with the eye: or the aggregate of all these. As to the *orbicularis*, it is evidently put into action by irritations affecting the eye, as from dust, flies, &c. even in adults.

The third of the external motions, or the contraction of the lacrymal and other neighbouring glands, arises from irritations in the eye, nose, *fauces*, and scalp of the head. The manner in which these irritations operate, has been sufficiently explained under Prop. LIII.

Of the internal motions I will consider the contraction of the greater and lesser rings together, as proceeding from the same causes, and being cotemporaneous; and, for the same reasons, the contraction of the radiated fibres, and ciliar ligament, together also. By the first the eye is fitted for distinct vision at small distances, by the other at great ones. Thus, let us suppose a candle to be brought nearer and nearer to the child's eye. It is evident, that the quantity of light which falls upon the eye will grow greater and greater. It will therefore agitate all the circular fibres of the *iris* more powerfully, and particularly the greater and lesser rings; *i. e.* it will bend the *cornea* into a greater convexity, bring the origin of the ciliar ligament nearer to its insertion in the *capsula* of the crystalline, *i. e.* suffer the *capsula* to become more convex also, and narrow the pupil, *i. e.* lessen the *radius* of dissipation. The image of the candle upon the *retina* may therefore continue to be distinct, as it approaches, by this mechanical influence of light upon the eye. And, for the same reasons, it may continue distinct, as it recedes. But there are limits on both hands. And thus the conformations of the eye necessary for distinct vision, according to Dr. Jurin's most accurate account of this matter, are brought about automatically, and suitably to the general theory of these papers.

However, it is also probable, that the light which passes in at the pupil, has great efficacy in contracting both the greater and lesser rings, as may be concluded from the immobility of the pupil in a *gutta serena*; also because, on this supposition, the light, which passes in at the pupil must, by contracting the lesser ring, become a check and guard against its own too free admission, which is agreeable to the tenor of nature in like instances. The *retina* extends to the greater ring, and may send some nervous fibres to it, and even to the *iris*.

One or both of these actions of light seem to increase the secretion and circulation of the aqueous humour in new-born children, so as to fit the eye for vision, which it is not, through the deficiency and muddiness of the aqueous humour, till some time after birth. This again may be considered as a circumstance that favours our present conjectures.

As to the radiated fibres of the *iris*, and the ciliar ligament, they do not seem so much to be excited to action by any external influence, as to be kept in a state of constant small activity by the vibrations which descend from the brain. When therefore the rings are relaxed, the radiated fibres will open the pupil, and the ciliar ligament draw out the *capsula* of the crystalline to a flatter shape, and thus suit the eye to obscure and distant objects.

PROP. LXIII.—*To explain the Manner and Degree, in which the automatic Motions, mentioned in the last Proposition, are influenced by voluntary and semi-voluntary Powers.*

SINCE the motions of the eyes are in every instance congruous, from the instant of birth, an associated tendency thereto is generated sooner, and more firmly established, than perhaps in any other case. As therefore the external influence of light, by growing languid, comes to have less and less effect perpetually for this purpose, so the associated tendency grows stronger and stronger; and the sum total of both may perhaps be always about equal.

However, this congruity does not seem to be so great in children as in adults, who can direct their optic axes by a perfectly voluntary power to the object which they intend to view with attention. We must examine therefore, how the almost perfect congruity becomes an entirely perfect one.

Now, here we are to observe, that the almost perfect congruity begets an almost perfect correspondency in the points of the *retina*; and that hence it will follow by degrees, that the least deviation from perfect congruity will occasion double vision, and confusion. But these are unpleasant and inconvenient, whereas single and distinct vision is pleasant and convenient. Whence every recurrency of the last will tend to confirm it, of the first to exclude it, from principles already laid down, Prop. XXII. Cor. I. The child will therefore come to a perfect congruity at last, *i. e.* to direct his optic axes precisely to the point which he intends to view. The voluntary power of suiting the internal motions to the distance must be supposed to grow perfect about the same time.

It agrees with this method of reasoning, that persons who lose the sight of one eye in their childhood or youth, though long after the external action of light has lost its efficacy for making the motions congruous, generally squint a little with that eye.

The persons who squint, preserving the sight of the squinting eye, are obliged to move their eyes in a congruous manner, for the same reason as others, *viz.* to avoid double vision, though the position be incongruous.

The constant action of the *elevator palpebræ superioris* in adults seems to be entirely from custom, *i. e.* association, being kept up in a more particular manner by the variety of visible objects, which engage our attention during the course of the day.

It is generally some time before children get the voluntary power of shutting the eyes gently, or of shutting one and not the other. They can shut them with force soon, this action recurring often from motes in the eyes, pain of any kind, &c. The procedure here is of the same kind as in other voluntary actions.

The internal motions depend originally upon the greater or less quantity of light which falls upon the *cornea* and *iris*, as has

been observed already. But the nearness and remoteness of the luminous object are the respective associates of these. The muscular rings therefore, which at first contracted only when very luminous objects approached, will afterwards contract when moderately luminous ones do. And thus vision will be made distinct in general. But distinct vision, by recurring, will perpetuate and perfect itself, and indistinct check and abolish itself, from the agreeableness and disagreeableness accompanying them respectively, by Prop. XXII. Cor. I. till at last the child gets a perfectly voluntary power of suiting his eyes to the distance. Adults seem to have a power of preparing the eyes previously to see at a proposed distance; and some to have a semi-voluntary power of contracting and dilating the pupil, *viz.* by fancying a bright object near, and a dark one far off; though the quantity of light which falls upon the eye remains the same.

SECT. V.

THE SENSE OF HEARING.

PROP. LXIV.—*To assign the immediate Organ of Hearing, and to explain in general the Uses of the several Parts of the external and internal Ear.*

THE immediate organ of hearing appears to be the soft portion of the seventh pair of nerves, distributed in the *cochlea*, and semi-circular canals. What the particular uses of these cavities are, is not known. They bear some obscure likeness to the instruments commonly made use of for increasing either the loudness of sounds, or the effects of them upon the ear; just as the coats and humours of the eye resemble lenses. The auditory nerve is also like the optic in detaching no branches off to the neighbouring parts; and there are many other instances of resemblance between these two most refined and spiritual, if one may so say, of our senses; some of which I shall mention in the course of this Section.

The auricle and *meatus auditorius* are cartilaginous, and seem by this means to be peculiarly fitted for receiving and retaining the vibrations of the air, and for communicating them to the *membrana tympani*.

This membrane appears to be kept in a state of constant tension by muscles, that act upon the small bones in different ways, and thus to be fitted for vibrating synchronously to the several sounds which affect it. Agreeably to which, the degree of tension varies, so as to be less when the *musculus externus* and

obliquus act, greater when these are relaxed, and the *internus* acts. The degree of sensibility both in the membrane itself, and in the whole organ, is probably greater when the tension is greater.

The vibrations of the air seem to shake off the *mucus* which lodges upon the *membrana tympani* in the new-born child, just as the action of light fits the *cornea*, and aqueous humour, for vision.

The eustachian tube serves to supply the cavity of the *tympanum* with air, to carry off the vapour which exhales into it, and perhaps to increase the effects of sounds by the tremors in its cartilaginous extremity, and particularly those of the person's own voice.

The *stapes*, its muscle, and the *foramen ovale*, seem designed to convey the vibrations of the *membrana tympani* to the auditory nerve, in a precise manner. But the vibrations excited in its æther may be much more frequent than those of the *membrana tympani*, as has already been observed.

There does not appear to be any method for conveying air into the cavities of the *vestibulum cochlea*, and semi-circular canals, nor any necessity or use for it there. The great hardness of the bony part of the organ of hearing may make it more easily susceptible of vibrations. Agreeably to which, it may be observed, that we can hear imperfectly, though the ears, nose, and mouth, be all stopped, and consequently all access to the *membrana tympani* by the vibrations of the air denied. The vibrations are here excited probably in the cartilages of the auricle and *meatus*, and in the bones of the skull, and thus communicated to the *cochlea*, and semi-circular canals. It seems to agree with this, that some partially deaf persons can hear best, when driven in a coach over stones or gravel; *i. e.* when all the parts of their bodies, and particularly those of the bones, are put into a vibrating motion.

The bony part of the organ of hearing seems to come to its full size early in life. Is not the final cause of this, that one part may, on account of its size, be most disposed to vibrate with one tone, another with another? And does not this hold particularly in respect of the *lamina spiralis*? For thus the same tone would be affixed and associated to the same nerves, so as to affect them peculiarly, from childhood or youth to old age.

PROP. LXV.—*To examine how far the Phænomena of musical and other inarticulate Sounds are agreeable to the Doctrine of Vibrations.*

HERE we may consider, first, the different strength of sounds. Now, as this arises from the different condensation of the air in the pulses, so the effect which it has upon the *membrana tympani*, the membrane of the *foramen ovale*, and the nerves of

hearing, must be different likewise, and afford the mind a sufficient foundation for distinguishing sounds in respect of strength and feebleness.

Secondly, the gravity and acuteness of sounds arise from the slowness or frequency of the vibrations. Now, as the vibrating of the *membrana tympani* are synchronous to those of the air, they may either excite synchronous ones in the particles of the auditory nerves, and thus be distinguished from each other in respect of frequency by the mind; or if every pulse of the air, and oscillation of the *membrana tympani*, excite innumerable infinitesimal vibrations in the auditory nerves, the renewal of these at different intervals according to the different gravity or acuteness of the sound will, however, afford a like criterion.

It may be remarked, that grave sounds are in general strong, acute ones feeble. For the bodies which yield grave sounds are in general large, and consequently will make an impression upon the air by a large number of trembling particles.

Thirdly, all very loud noises are disagreeable. Now it is easy to conceive, that very violent agitations of the *membrana tympani* may produce the solution of continuity in the small medullary particles of the auditory nerve. An inflammation in the small vessels of the auditory nerve may render it so susceptible of violent vibrations, as to be hurt by gentle sounds, as sometimes happens in distempers; and to produce that acuteness in the sense of hearing, which answers to the *nyctalopia* in the eye.

Fourthly, Single musical, *i. e.* uniform sounds, whether vocal or instrumental, are pleasant in proportion to their loudness, provided this be not excessive. We must therefore suppose here, that the repeated impulses of the air, at equal distances, make the vibrations approach to the solution of continuity; yet still so as to fall short of it.

Fifthly, Two musical notes sounded together, suppose upon an organ or violin, afford a greater original pleasure than one, provided the ratios of their vibrations be sufficiently simple. Thus any note sounded with its eighth, fifth, fourth, third major or minor, sixth major or minor, affords pleasure, the ratios being here, respectively, those of 1 to 2, 2 to 3, 3 to 4, 4 to 5, 5 to 6, 3 to 5, and 5 to 8, which are all very simple ones. But a note with its flat or sharp, second, or seventh, or flat fifth, is originally disagreeable. It may be observed also, that concords seem to be originally pleasant in proportion to the simplicity of the ratios by which they are expressed, *i. e.* in the order above set down. Hence we may perhaps suspect, that even the concords were originally unpleasant to the ear of the child, from the irregularity of the vibrations which they impress upon the *membrana tympani*, and consequent solution of continuity; and that they fell at last within the limits of pleasure, as many other pains do, by repetition. For thus those concords in which the ratios are simplest would become pleasant first, and the others would continue to

excite pain, or to border upon it. It is agreeable to this, that discords become at last pleasant to the ears of those that are much conversant in music, and that the too frequent recurrency of concords cloy.

Sixthly, Concords sounded in succession seem to have the same effect, in kind, upon the ear, as when sounded together, only less in degree. But discords in succession do not offend, unless the chromatic succession of half notes, or some such remarkable ones, and even these please at last. All this follows easily from the last paragraph; and the present paragraph, with the two last, taken together, contain the principal grounds of the natural and original pleasures of music. The pleasures which it derives from association will be considered hereafter.

PROP. LXVI.—*To examine how far the Judgments which we make concerning the Distance and Position of the sounding Body are agreeable to the Doctrine of Association.*

SOUNDS ought to decrease in the reciprocal duplicate ratio of the distance, did they not receive some support from the reflection of the bodies over which they pass. This makes them decrease in a less ratio; however, they do decrease in general with the distance; and this decrease, being an associate of the increase of distance, ought to suggest it to the imagination. And, agreeably to this, we may observe, that, when the wind opposes the sound of bells, they appear farther off; when a person calls through a speaking trumpet, he appears nearer, than at the true distance.

As to the position of the sounding body we have no clear or certain criterion, unless it be very near us; so as that the pulses may strike one ear, or one part of the head, considerably stronger than another. Hence we judge of the position of the speaker, or sounding body, by the eye, or by some other method independent on the ear. And thus, if from some mistaken presumption a voice, or sound, shall be deemed to come from a quarter different from the true place of it, we shall continue in that error from the strength of that mistaken presumption.

By laying these things together, and also considering farther, that indistinctness in articulate sounds is an associated mark of distance, we may see how *ventriloqui*, or persons that speak in their throats, without moving their lips, impose upon the audience. Their voice is faint and indistinct, and therefore appears to come from a more distant quarter than the speaker. The hearers look about therefore, and, being surprised, their imagination fixes strongly upon that corner, or cavity, which appears most plausible; and afterwards they continue to impose upon themselves by the strength of this prejudice.

PROP. LXVII.—*To examine how far the Power of distinguishing articulate Sounds depends upon the Power of Association.*

ONE may suppose the external and internal ear to be so formed, as that all the differences in the vibrations of the air, which arrive at the ear, may affect the auditory nerves with corresponding differences. Let us therefore first consider in what manner different sounds impress different vibrations upon the air.

First, then, Since not only the parts about the throat, but those of the mouth, cheeks, and even of the whole body, especially of the bones, vibrate in speaking, the figure of the vibrations impressed upon the air by the human voice will be different from that of the vibrations proceeding from a violin, flute, &c. provided the distance be not too great. This therefore may be considered as one help for distinguishing articulate sounds from all others.

Secondly, Articulation consists in breaking out from a whisper into sound, or closing the sound in different manners, the organs of speech being put also into different shapes, so as to join the differences mentioned in the last paragraph with various eruptions and interruptions, ascents and descents of sound. And thus each letter may be distinguished from every other by hearing.

Thirdly, It is agreeable to all this, that it is difficult at great distances to distinguish the tone of one musical instrument from another, or of any from the tone of a human voice, *cæteris paribus*; or to distinguish articulate sounds from one another. For at great distances the vibrations of the air are circular to sense, and all the ascents, descents, eruptions and interruptions of sound, which distinguish one compound sound from another, are confounded by numberless reflections from the intermediate bodies.

Fourthly, We may observe, that as the preserving the distinction of place is the chief end of the coats and humours in the organ of sight, so the distinction of time is of the greatest importance in hearing. It seems probable therefore, that the *membrana tympani*, small bones, and their muscles, are so contrived, as by their actions to preserve the distinction of time, *i. e.* to extinguish strong sounds, and to keep up weak ones, so as that the last may not be too much overpowered by the continuance of the first; just as the treble notes of a harpsichord would be by the bass ones, did not the bits of cloth affixed to the jacks check the vibration of the strings in due time.

Having now shown how articulate sounds may be distinguished from one another, and from all other sounds; I next observe, that, in fact, the speakers do not pronounce so articulately and distinctly in common conversation, as to furnish the hearers with the requisite criterions according to the foregoing theory; but that we arrive at a facility of understanding one another's discourse, chiefly by the power of association.

And, first, It is needless to pronounce every letter so as to distinguish it from all others. For then words, which are composed of letters, would each have as many criterions as they have letters, and even more; for the order of the letters is a criterion, as well as the sound of each letter. In like manner, sentences would have as many compound criterions as they have words, besides the criterion arising from the particular order of the words.

Secondly, Since words are formed from combinations, not according to any rule, which brings up all the combinations of twos, threes, &c. in order, but by particular associations, agreeably to the nature of each language, since also sentences are formed in the same way, the several component parts of words and sentences suggest each other, and also the whole words and sentences, by the power of association. Thus the beginning is commonly observed to suggest the whole, both in words and sentences; and the same is true, in a less degree, of the middles and ends.

Thirdly, The subject matter of the discourse, the gestures used in speaking, a familiar acquaintance with the particular voice, pronunciation, gestures, &c. of the speaker, and other associated circumstances, contribute greatly also. And therefore, on the other hand, we find it difficult to distinguish proper names, and the words of an unknown language, and to understand a person that is a stranger, or that uses no action.

We may see also, that it is chiefly by the means of associated circumstances, that the sounds uttered by *ventriloqui* suggest to us the words which they are supposed to pronounce; for their articulation must be very incomplete, as they do not move their lips at all.

It is by a like set of associated circumstances that we are enabled to read with so much facility the irregular hand-writing of various persons, and of some more than others, in proportion as we are better acquainted with the subject, language, hand-writing, &c.

PROP. LXVIII.—*The Doctrine of Sounds illustrates and favours that of the Vibrations of the small medullary Particles of the Brain, and nervous System.*

FOR the theory of sounds deduced from the nature of an elastic fluid, and the tremors of the particles of sounding bodies, and afterwards verified, as it has been, by numerous experiments, becomes a guide to us in all inquiries into the vibrations of other elastic mediums, such as the æther, and into the effects, which such vibrations must impart to and receive from the small particles that are surrounded by the elastic medium. And the general tendency which is found in natural bodies, either to yield a sound upon percussion, or at least to support and convey

sounds by receiving isochronous vibrations, and reflecting them, shews, that there are latent active powers in the small parts of bodies, which dispose them to vibrate. Now, if there be such powers in the biggest component particles, analogy inclines one to expect them in the several descending orders.

The doctrine of sounds does also furnish us with an answer to one of the principal and most obvious difficulties attending the supposition, that all sensation, thought, and motion, is performed by vibrations in the medullary substance. For it may be objected, that such a number of different vibrations as seems to be required in certain cases, can scarce exist together in the medullary substance. Thus it is not uncommon for a person to receive a series of sensations, carry on a train of thought, and perform a course of external actions, which have little connexion with each other, at the same time. Now to this we may answer, that vibrations as different from each other do, in fact, exist together in common air, in such a manner as to be perceived distinctly. Thus a person may listen to what part he pleases in a concert of music, and masters in the art can listen to more than one. They can also at the same time receive, attend to, and understand the vibrations of the air, arising from the discourse of other persons. But in whatever manner these different vibrations can exist together precisely at the same instant, or rather succeed each other at infinitesimal intervals, without confusion; in the same manner may vibrations and vibratiuncles exist together, or succeed each other, without confusion also, in the medullary substance. And by whatever power the soul is qualified to attend to, and distinguish from each other, these several vibrations of the air, by the same power may it correspond to the vibrations in the medullary substance, so that each shall have its peculiar effect of producing the appropriated sensation, thought, and motion. It is to be observed farther, that there is a difficulty in performing both the things here mentioned; that confusion does often arise; and that where any person is remarkable for doing more than one thing at once, it is in consequence of great practice, and also of exquisite mental powers, *i. e.* of an exquisite make of the medullary substance, according to the theory of these papers.

PROP. LXIX.—*To explain in what Manner, and to what Degree, agreeable and disagreeable Sounds contribute, in the way of Association, to the Formation of our intellectual Pleasures and Pains.*

As all moderate and tolerably uniform sounds please young children, and the original pleasures from concords sounded together, from the succession of both concords and discords, and even from clear musical sounds, considered separately, remain with us through the whole progress of life, it is evident, that

many of our intellectual pleasures must be illuminated and augmented by them. And on the contrary, harsh, irregular, and violently loud noises must add something to the disagreeableness of the objects and ideas with which they are often associated.

The pleasures of music are composed, as has been already observed, partly of the original, corporeal pleasures of sound, and partly of associated ones. When these pleasures are arrived at tolerable perfection, and the several compounding parts cemented sufficiently by association, they are transferred back again upon a great variety of objects and ideas, and diffuse joy, good-will, anger, compassion, sorrow, melancholy, &c. upon the various scenes and events of life; and so on reciprocally without perceptible limits.

The corporeal pleasures from articulate sounds are either evanescent from the first, or, however, become so very early in life. By this means we are much better qualified to receive information, with mental pleasure and improvement, from them; and the ear becomes, like the eye, a method of perception suited to the wants of a spiritual being. And indeed when we compare the imperfections of such as have never heard, with those of persons that have never seen, it appears, that the ear is of much more importance to us, considered as spiritual beings, than the eye. This is chiefly owing to the great use and necessity of words for the improvement of our knowledge, and enlargement of our affections; of which I shall have particular occasion to treat hereafter. An accurate inquiry into the mental progress of persons deprived of the advantages of language, by being born deaf, would be a still better test of the theory of these papers, than a like inquiry concerning persons born blind.

PROP. LXX.—*To give an Account of the Ideas generated by audible Impressions.*

THE ideas which audible impressions leave in the region of the brain, that corresponds to the auditory nerves, are, next to the ideas of sight, the most vivid and definite of any; and all the observations above made upon the ideas of sight may be applied to those of hearing, proper changes and allowances being made. Thus, after hearing music, conversing much with the same person, in general disorders of the brain, or particular ones of the nervous spasmodic kind in the stomach, after taking opium, in dreams, in madness, trains of audible ideas force themselves upon the fancy, in nearly the same manner, as trains of visible ideas do in like cases. And it may be, that in passing over words with our eye, in viewing objects, in thinking, and particularly in writing and speaking, faint miniatures of the sounds of words pass over the ear. I even suspect, that in speaking, these miniatures are the associated circumstances which excite the action, be it voluntary, or secondarily automatic. For children

learn to speak chiefly by repeating the sounds which they hear, *i. e.* these sounds are the associated circumstances which excite to action. But if the sound does this, the idea of it must get the same power by degrees. I grant indeed, that the pictures of words in the eye, and their ideas, may be like associated circumstances, exciting to speak; and since it is necessary, according to the theory of these papers, that every semi-voluntary, voluntary, and secondarily automatic action should be excited by an associated circumstance, one may reckon words seen, and their visible ideas, amongst the number of such circumstances. But words heard, and their audible ideas, have a prior claim; and, in persons who cannot read or write, almost the only one. It confirms this, that in writing one is often apt to mis-spell in conformity with the pronunciation, as in writing *hear* for *here*; for this may proceed from the audible idea, which is the same in both cases; cannot from the visible one. Where a person mis-spells suitable to a mispronunciation, which sometimes happens, it can scarce be accounted for upon other principles. However, in writing, the associated circumstance, which excites the action of the hand, is most probably the visible idea of the word, not the audible one.

If it be objected to the supposition of these audible trains, that we ought to be conscious of them, I answer, that we are in some cases; which is an argument, that they take place in all, in a less degree; that the greater vividness of the visible trains makes us not attend to or recollect them, till the consciousness or memory be vanished; and that even visible trains do not appear as objects of consciousness and memory, till we begin to attend to them, and watch the evanescent perceptions of our minds.

The ideas of sight and hearing together are the principal storehouse of the fancy or imagination; and the imaginative arts of painting and music stand in the same relation to them respectively. Poetry comprehends both by taking in language, which is the general representative of all our ideas and affections.

As there is an artificial memory relative to the eye, by which trains of visible ideas, laid up in the memory in a certain order, are made to suggest both things themselves, and the order in which we desire to remember them; so compendious trains of technical words formed into verses may be made to suggest other words, also the numeral figures in a certain order; and by this means, to bring to view, at pleasure, the principles and materials of knowledge for meditation, inquiry, and more perfect digestion by the mind, as appears from Dr. Grey's *Memoria Technica*. The visible *loci* make a stronger impression on the fancy, and therefore excel the audible ones in that view; but the audible ones have a much more ready and definite connexion with the things to be remembered; and therefore seem most proper, upon the whole, in most branches of literature. And as

Dr. Grey's method is highly useful in general, so it is particularly excellent in respect of all memorables that are represented by numeral figures. For, when the numeral figures are denoted by letters, collections of them, such as dates, and quantities of all kinds, make short and definite impressions upon the ear; which are not only easy to be remembered, but also preserve the order of the figures without danger of error: whereas neither the impressions which collections of figures make upon the eye, nor those which their enunciations in words at length make upon the ear, can be remembered with facility or precision; because neither figures, nor their names, cohere together, so as that the precedent shall suggest the subsequent; as the letters do in collections of them, capable of being pronounced. When the technical word coincides with, or approaches to, a familiar one, it is remembered with greater facility. Association is every where conspicuous in these things.

PROP. LXXI.—*To explain the automatic Motions, which are excited by Impressions made on the Ear.*

It does not appear at all improbable, that the vibrations, which are excited by sounds in the cartilages of the auricle and *meatus auditorius*, should pass into the small muscles of the auricle, and there occasion automatic motions. And I guess in particular, that in very loud sounds, the cartilages would be made to lie closer to the head. But the smallness of these muscles, and the practice of binding down the ears of new-born children close to the head, which restrains the natural action of these muscles, whatever it might be, prevent our making any certain judgment.

As to the four muscles which belong to the small bones, it appears to me, that since the *externus* and *obliquus* lie out of the *tympanum*, exposed to the common air, and are also so situated, that the *externus* may receive vibrations from the cartilage of the *meatus auditorius*, the *obliquus* from the cartilage of the *processus ravianus*, into which it is inserted, they must be much more affected by loud sounds, than the *internus* or *musculus stapedis*. It follows therefore, that the *membrana tympani* will be relaxed automatically by loud sounds. Here therefore is another remarkable coincidence between efficient and final causes.

For what reasons the *musculus internus*, and *musculus stapedis*, may act peculiarly in weak sounds, is difficult to say. They may perhaps, as was above conjectured of the radiated fibres of the *iris*, depend chiefly on the influences which descend from the brain, and therefore act always, when the other two will give them leave. It is most probable, that the four muscles act in various proportions and combinations, so as to answer a variety of purposes. But there is very little, that is satisfactory, to be met with in books of anatomy and physiology hitherto, concerning the peculiar minute uses and functions of the several parts of the organ of hearing.

PROP. LXXII.—*To explain the Manner and Degree, in which the automatic Motions, mentioned in the last Proposition, are influenced by voluntary and semi-voluntary Powers.*

SINCE grave sounds are in general loud, acute ones weak, the relaxation of the *membrana tympani*, which first attends upon loud sounds automatically, will afterwards, by association, be made to attend upon grave ones, even though they are not loud; and, in like manner, the membrane will be tense, from acute sounds, though they should be strong; *i. e.* the membrane will, by association, be fitted to vibrate isochronously with the several tones; just as the convexity of the *cornea* is made by association to suit itself to the several distances. The accommodation is at first gross in both cases; but is perfected afterwards from the view of pleasure and convenience, by means of the frequent recurrency of the actions. See Prop. XXII. Cor. I.

We seem also to have a voluntary power of preparing the ear previously for very strong, or very weak sounds, which we expect to hear, just as it was before observed of the eye, that we can suit it previously to see at an expected distance. The generation of these powers is the same as that of the other voluntary ones.

SECT. VI.

THE DESIRES OF THE SEXES TOWARDS EACH OTHER.

PROP. LXXIII.—*To examine how far the Desires of the Sexes towards each other are of a factitious Nature, and deducible from the Theory of these Papers.*

HERE we are to observe, first, that when a general pleasurable state is introduced into the body, either by direct impressions, or by associated influences, the organs of generation must sympathize with this general state, for the same reasons as the other parts do. They must therefore be affected with vibrations in their nerves, which rise above indifference into the limits of pleasure from youth, health, grateful aliment, the pleasures of imagination, ambition, and sympathy, or any other cause, which diffuses grateful vibrations over the whole system.

Secondly, As these organs are endued with a greater degree of sensibility than the other parts, from their make, and the peculiar structure and disposition of their nerves, whatever these be, we may expect, that they should be more affected by these general pleasurable states of the nervous system than the other parts.

Thirdly, The distention of the cells of the *vesiculæ seminales*, and of the *sinuses* of the *uterus*, which take place about the time of puberty, must make these organs more particularly irritable then. It may perhaps be, that the acrimony of the urine and *fæces*, which make vivid impressions on the neighbouring parts, have also a share in increasing the irritability of the organs of generation.

Fourthly, Young persons hear and read numberless things, in this degenerate and corrupt state of human life, which carry nervous influences of the pleasurable kind (be they vibrations, or any other species of motion) to the organs of generation. This will be better understood, if the reader please to recollect what was delivered above concerning the methods by which we learn to distinguish the sensations of the parts external and internal from each other. For it will be easy to see, that when we are once arrived at this power, the associated circumstances of any sensations, such as the language that relates to them, will recall the ideas of these sensations.

Fifthly, The particular shame, which regards the organs of generation, may, when considered as an associated circumstance, like other pains, be so far diminished as to fall within the limits of pleasure, and add considerably to the sum total.

Sixthly, The sources here pointed out seem sufficient to account for the general desires, which are observable in young persons; and which, when not allowed and indulged, may be considered as within the confines of virtue.

Seventhly, It is usual for these desires, after some time, to fix upon a particular object, on account of the apprehended beauty of the person, or perfection of the mind, also from mutual obligations, or marks of affection, from more frequent intercourses, &c. after which these desires suggest, and are suggested by, the idea of the beloved person, and all its associates, reciprocally and indefinitely, so as in some cases to engross the whole fancy and mind. However, this particular attachment, when under proper restrictions and regulations, is not only within the confines of virtue, but often the parent of the most disinterested, and pure, and exalted kinds of it.

Eighthly, When these desires are gratified, the idea of the beloved person, and its associates, must now be associated with the state of neutrality and indifference, that succeeds after gratification. Whence it appears, that that part of the affection towards the beloved person, which arises from gross animal causes, cannot remain long at its height, and may fall very fast. However, if the other sources of affection grow stronger, the sum total may continue the same, or even increase.

Ninthly, When impure desires are allowed, indulged, and heightened voluntarily, it is evident from the doctrine of association, that they will draw to themselves all the other pleasures of our nature, and even, by adhering to many neutral circumstances,

convert them into incentives and temptations. So that all the desires, designs, and ideas of such persons are tainted with lust. However, the diseases and sufferings, bodily and mental, which this vice brings upon men, do, after some time, often check the exorbitancy of it, still in the way of association. But impure desires subsist, like vicious ones of other kinds, long after the pains outweigh the pleasures, inasmuch as they must be supposed not to begin to decline till the pains apprehended to arise from them, and thus associated with them, become equal to the pleasures.

Tenthly, It appears from the course of reasoning here used, that impure and vicious desires, indulged and heightened voluntarily, can by no means consist with a particular attachment and confinement; also that they must not only end frequently in indifference, but even in hatred and abhorrence. For the proper mental sources of affection are not only wanting in these cases, but many displeasing and odious qualities and dispositions of mind must offer themselves to view by degrees.

Eleventhly, As the desires and pleasures of this kind are thus increased by associated influences from other parts of our natures, so they are reflected back by innumerable associated methods, direct and indirect, upon the various incidents and events of life, so as to affect in secondary ways even those who have never experienced the gross corporeal gratification. And, notwithstanding the great and public mischiefs, which arise from the ungovernable desires of the vicious, there is great reason, even from this theory, to apprehend, that if this source of the benevolent affections was cut off, all other circumstances remaining the same, mankind would become much more selfish and malicious, much more wicked and miserable, upon the whole, than they now are.

Twelfthly, I have hitherto chiefly considered how far the present subject is agreeable to the doctrine of association; but if physicians and anatomists will compare the circumstances of the sensations and motions of these organs with the general theory delivered in the first chapter, they may see considerable evidences for sensory vibrations, for their running along membranes, and affecting the neighbouring muscles in a particular manner: they may see also, that muscular contractions, which are nearly automatic at first, become afterwards subject to the influence of ideas.

Thirteenthly, The theory here proposed for explaining the nature and growth of these desires shews in every step, how watchful every person, who desires true chastity and purity of heart, ought to be over his thoughts, his discourses, his studies, and his intercourses with the world in general, and with the other sex in particular. There is no security but in flight, in turning our minds from all the associated circumstances, and begetting a new train of thoughts and desires, by an honest,

virtuous, religious attention to the duty of the time and place. To which must be added great abstinence in diet, and bodily labour, if required.

SECT. VII.

OF OTHER MOTIONS, AUTOMATIC AND VOLUNTARY, NOT CONSIDERED IN THE FOREGOING SECTIONS OF THIS CHAPTER.

PROP. LXXIV.—*To examine how far the Motions of the Heart, ordinary and extraordinary, are agreeable to the Theory of these Papers.*

HERE I observe,

First, that the motion of the heart is constant, more equable than any other in the body, and cannot be supposed to proceed from impressions made on the neighbouring parts; which things agree well together upon the supposition of the doctrine of vibrations: for thus it cannot proceed from the first or fourth source of motory vibrations; and if it proceed from the second and third, it ought to be constant, and nearly equable.

Secondly, We are not to inquire, how the heart is first put into motion in the fœtus, but only how its ordinary motions may be continued, by means of vibrations descending from the brain, after they are once begun.

Now, for this purpose, let us suppose, that the auricles, with the beginnings of the pulmonary artery and aorta, have finished their contractions; and that the ventricles and coronary vessels are full. It follows, that the ventricles will now be excited to contraction by three causes; *viz.* by the vibrations which have continued to descend freely into their fibres ever since their last contraction was finished, by their distention from fulness, and by the motion and impulse of the blood in the coronary vessels: but from the moment that the ventricles begin to contract, the auricles and arteries will begin to fill, and will be fullest at the instant when their contraction is finished. The auricles and arteries must therefore begin to contract at this instant, from descending vibrations and distention, and the ventricles to be relaxed and filled, the vibrations in their fibres being checked by their past contraction. Let these actions be completed, and the heart will be in the circumstances first supposed; *i. e.* the ventricles will be ready for a fresh contraction, and so on alternately, as long as life continues.

Thirdly, The vibrations which keep up the heart's motion, are nearly allied to those arising from heat; for the second source of

motory vibrations is the residue of all the vibrations excited in the various parts of the body; and the third arises chiefly from the heat of the blood. We may expect therefore, that the heart should contract either more frequently, or more strongly, or both, when the body is heated. And thus it is, as may appear from observations upon the pulse in fevers, in sleep, after eating, in pains or distempers attended with an increase of heat, &c. in which the motion of the blood is increased; whereas in nervous pains attended with coldness of the extremities, the pulse is low and slow.

Fourthly, In the declension of fevers the pulse is quick and feeble. It is feeble, because the whole body is so; and quick, partly from the new habit superinduced by the heat in the beginning of the fever; partly, because in fevers the heart is always kept nearly full, *i. e.* nearly at such a degree of distention as incites it to contraction, the principal causes of which are the weakness and inactivity of the body: hence in general the pulse is quick and feeble in persons of relaxed habits; the contrary in strong ones.

Fifthly, The pulse is quick in young and small animals; slow in old and large ones. For this, various reasons may be assigned; as first, that if the velocity wherewith the sides of the heart move towards each other be the same, the contraction must be sooner accomplished in small hearts than in large ones. Secondly, that the fibres in young animals are irritable, and soon excited to contraction, by distention, &c. Thirdly, that the contraction is performed slowly in old animals; and fourthly, that short fibres are perhaps sooner excited to contraction than long ones, it being necessary perhaps, that the vibrations should be reverberated from each end of the fibres, for many successions, before they can rise to a certain pitch. It agrees with this, that reciprocal motions are more frequent in general, and *cæteris manentibus*, as the animal is less; that the limbs have both long and short flexors and extensors, the first for great degrees of motion, the last for making a quick beginning; that the capsular ligaments of the joints have short muscular fibres inserted into them, in order to keep them from being pinched between the bones in the motions of the joints, as Winslow has observed; which they could not do, had not their contraction the start of the contractions which move the joint; and lastly, that the fibres which compose the heart, are all of equal lengths, according to Dr. Stewart's analysis of them. See Phil. Trans. N^o. 460.

Sixthly, The heart may move incessantly without fatigue, if we only suppose the recruits to be sufficient, and the degree of motion to be within due limits. And it may be, that in labouring men the muscles of the limbs are as much exerted upon the whole as the heart. The warmth in which the heart is kept, and its receiving nerves from the eighth pair and intercostal, which seem to be particularly exempted from venal compression,

deserve notice here: but the constant motion of the blood is principally to be considered, being the cause as well as the effect of the constant motion of the heart.

Seventhly, Since lying down prevents or alleviates the fainting which sometimes happens during bleeding, one may suppose that this fainting, and the consequent abatement or cessation of the motion of the heart arise, because a quantity of blood, sufficient to keep up the vibrations in the brain, could not ascend thither in an erect posture.

Eighthly, Sudden and violent pains, such as those from wounds, increase the motions of the heart. This may be accounted for from the violent vibrations which ascend to the brain, and are thence propagated to the heart. But may not vibrations ascend also directly from the wounded part, along the course of the arteries and veins, to the heart?

Ninthly, All the passions of the mind increase the motion of the heart, as might be expected: but melancholy, when it makes men inactive, and uninfluenced by the impressions of objects, has a contrary effect, which is equally suitable to the foregoing theory.

Tenthly, In mortifications, also in the languid state that succeeds acute distempers, &c. the pulse sometimes intermits, suppose once in 5, 10, 20, &c. times, the interval being about double, and the strength of the pulse which succeeds the intermission about double also. Here the force of the heart seems to languish, and the time of contraction of the ventricle to be protracted, till a second contraction of the auricle intervenes, and protracts the ventricle's contraction still farther, *viz.* to nearly twice the interval. The heart must therefore be surcharged, and contracting stronger from this respite, must send, as it were, a double quantity of blood into the aorta, *i. e.* make the pulse that succeeds much stronger. And this intermission may return at greater or less intervals, according to the circumstances, while this weakness of the heart continues: it may also remain, when once established, from habit, or association.

This intermission may perhaps rather be accounted for thus: in languid states the blood is accumulated in the beginning of the aorta. The aorta will not therefore receive much blood from the heart, though it does contract; *i. e.* no pulse will be felt; *i. e.* the interval will be double: the succeeding pulse will be strong, from the now greater emptiness of the aorta, and fulness of the heart: the intermission will also return when the accumulation in the aorta does. It agrees with this account, that these intermissions are usually felt in the region of the heart by the patients. May not intermissions arise from both causes in different circumstances?

Eleventhly, When the pulse flutters from flatulencies and spasms in the stomach and bowels, it appears that a sudden stop is put to the blood of the aorta, which by surcharging the left

ventricle at once, makes it contract at a different time from the right, and not at a due interval from the contraction of the auricles: for this fluttering of the pulse attacks generally in an instant, and often upon a fruitless effort to expel wind from the stomach. When the contractions of the ventricles are once become asynchronous and inharmonious to those of the auricles, it may require some time to rectify this, and especially while there is an impediment to the blood's motion through the aorta. This disorder may likewise continue through habit and association, and recur perpetually from less and less causes. The intermission of the pulse, considered in the two preceding paragraphs, is often caused by flatulencies, as well as the fluttering of it mentioned in this.

Twelfthly, The motions of the heart remain in their original automatic state more than any other in the body; the reasons of which are, that the common motions are equally associated with every thing, *i. e.* peculiarly so with nothing; and that very few impressions make changes in the motions of the heart so great and sudden, as to subject it to the ideas of these impressions: however, as great and sudden changes are sometimes brought on by pain, fear, surprise, joy, &c. we seem to have a semi-voluntary power to alter the motion of the heart immediately, by introducing strong ideas, our power of introducing these being semi-voluntary: nay, it may be possible for persons in very particular circumstances to acquire still greater degrees of power over the motion of the heart.

PROP. LXXV.—*To examine how far the Action of Respiration, ordinary and extraordinary, also the particular Actions of Sighing, Coughing, Laughter, Sobbing, and shedding Tears, from Grief, are agreeable to the foregoing Theory.*

THE first observation to be made here, is, that common respiration is performed very feebly in new-born children. A slight disposition therefore to alternate action in the diaphragm, and other muscles of respiration, may be sufficient to account for that degree of respiration which takes place in new-born children. It is natural to expect, that respiration in them should be feeble, since they must lean in this, as well as in other things, to their preceding state *in utero*.

Secondly, That the vigorous impressions from the cold air, the hands of the midwife, &c. may excite the strong respiration and crying which take place upon birth ordinarily, appears from the methods used to make the new-born child respire freely, where it fails to do this in extraordinary cases; such as applying volatiles to the nose, pouring wine into the mouth, swinging it to and fro, &c. All these methods excite the muscles to contraction, by making strong impressions on the neighbouring sensory nerves. They are also very agreeable to the notion of vibrations.

Thirdly, If we suppose the diaphragm to have finished its contraction, and consequently the thorax to be raised, and the abdomen to be distended, expiration must succeed, for three reasons; *viz.* because the contraction of the diaphragm has checked the vibrations in its fibres, and therefore has disposed them to relaxation; because the elasticity of the cartilages of the ribs tends to restore the thorax to a more depressed state; and because the fibres of the abdominal muscles are excited to vibrations and contraction by their distention. Suppose now expiration to be completed, and the vibrations, which descend into the diaphragm, from the second and third source of motory vibrations, will renew its contraction, and consequently the action of inspiration; and so on alternately.

Fourthly, The diaphragm is the more disposed to receive vivid vibrations in its fibres, from its nearness to the heart, and the warmth in which it is always kept. It deserves notice here, that the diaphragm receives its nerves from the cervical pairs, not from the eighth pair and intercostal, as the neighbouring parts, the heart, stomach, &c. do. Perhaps it was requisite, that it should derive its nerves from the spinal marrow, since the other muscles of respiration do. The nerves of the diaphragm are elongated during its contraction, the contrary to which happens in the nerves of other muscles. They are also kept in constant motion by the constant motion of the thorax, through which they pass; and this perhaps may contribute to the perpetual activity of the diaphragm.

Fifthly, The intercostal muscles are disposed to alternate contractions for the same reasons as the diaphragm, though these reasons do not hold in the same degree; however, since the contraction of the diaphragm, and consequent distention of the abdomen, must raise the thorax, the contraction of the intercostal muscles must from the first be synchronous to that of the diaphragm; and association will soon generate a permanent disposition to this synchronism. It follows according to this theory from the vicinity of the internal intercostal muscles to the external ones, that they ought to have the same action. And the same conclusion appears to result from anatomical considerations.

Sixthly, It may however be supposed, that the diaphragm and intercostal muscles are, as it were, fatigued by constant action; and that they incline to sympathize in inactivity with the rest of the muscles, especially during sleep. But then the accumulation of blood in the lungs, which the intermission of respiration must occasion, after it has once had a free passage through the lungs by means of respiration, will produce so much uneasiness, *i. e.* such vigorous vibrations, in the lungs, and particularly in their external membrane, which is continuous to the pleura, as will renew respiration.

It is agreeable to this, that if very young children sleep upon

a bed, they often fall into a great uneasiness from the stoppage of respiration, and recover from it by crying; and that rocking, or any other gentle motion, will prevent this. The last circumstance is particularly favourable to the notion of vibrations.

The night-mare in adults appears to be a disorder of the same kind. A full supper, and lying upon the back, dispose to it, by hindering the free motion of the diaphragm. Motion, and especially when attended with quick respiration, laughter, &c. prevent it, by giving activity to the diaphragm. Shaking the person affected, calling to him, &c. rouse from it, by exciting vibrations. The uneasiness from accumulated blood does the same thing at last.

It is easy to see, that if a like disposition to inaction should arise in the hearts of new-born children, or adults, the motion and distending force of the venal blood must renew their action for similar reasons. It is remarkably coincident with this, that forcing the venal blood upon the heart has in some cases been found to renew its action even after death.

Seventhly, The actions of sighing, crying, coughing, sneezing, &c. by recurring frequently, and making all the muscles, which can in any degree contribute to respiration, unite therein, enlarge the range of respiration by degrees, and make this action be performed with greater strength perpetually in the young child. The increase of strength in the whole muscular system must however be considered likewise.

Eighthly, The same actions have also a great share in begetting voluntary respiration. For more muscles are put into action in voluntary respiration, than in that which is ordinary.

Ninthly, It is agreeable to the foregoing theory, and to parallel observations on the heart, that respiration should be stronger in fevers, in sleep, and in general wherever the heat of the blood is increased, than in ordinary cases. For respiration depends chiefly on the second and third sources of motory vibrations. By this means the force of the respirations answers in a general way, as it ought to do, to the force with which the blood is moved, or to the force of the heart.

I now come to the particular consideration of the actions of sighing, coughing, laughter, and sobbing, and shedding tears from grief.

Sighing is an extraordinary contraction of the diaphragm. It arises not only from all causes, which accumulate the blood in the lungs, and thus excite the diaphragm to an extraordinary contraction; but also from such compressions of the *abdomen* as hinder the free motion of the diaphragm for a time. For thus a disposition to vibrate is accumulated in the fibres of the diaphragm. It is however to be observed, that this compression of the *abdomen* does also accumulate blood in the lungs. The *abdomen* seems to be compressed in a state of sorrow, attention, &c. The frequent recurrency of sighing makes it voluntary early

in youth. But it is not performed voluntarily with the same force, as when from a pressing uneasiness in the lungs.

Coughing arises from an uneasy sensation in the wind-pipe fixing in the point of the *epiglottis*, as the sensation which causes sneezing does in the tip of the nose. This ought also to become voluntary, and to be weaker when voluntary, than when excited by a strong irritation.

Hawking is a voluntary action, derived from coughing, as blowing the nose is from sneezing. Spitting is nearly related to these actions. It tallies perfectly with the foregoing theory, that children cannot hawk, spit, or blow the nose, for some years.

Laughter is a nascent cry, recurring again and again, as has been observed before, Prop. XXVI. By degrees it puts on a certain type, and recurs again and again according to that type, just as other actions. And it is excited in young children not only by the sensation of tickling, which lies, as it were, between pleasure and pain, but by the apprehension of this, or any other apprehension sufficiently moderate, by every surprise, and every mental emotion that lies between pleasure and pain, and by all the associates of these, as particularly by seeing others laugh. And thus children laugh more and more, and get a power of performing the action of laughter at pleasure, though with less force than when it is excited by its proper cause in full vigour.

It is remarkable, that young brute creatures, in their sportings with each other, make such noises, as bear the same analogy to their violent cries, which laughter in us bears to crying from pain.

Bodily pain is attended with violent and irregular respiration on account of the violent and irregular vibrations, which, in this case, first ascend to the brain, and then descend into the diaphragm. Hence mental pain, which is the offspring of bodily pain, is attended also with violent and irregular respiration, *i. e.* with sobbing. The crying which used to attend bodily pain in childhood is often checked in the mental pains of adults by fear, shame, &c. *i. e.* by a voluntary or semi-voluntary power; and this seems to make the respiration so much the more irregular.

It is more difficult to account for the shedding tears from grief; for very young children are not apt to shed tears when they cry. It seems to me, that so great and general a disorder in the brain, as that which takes place in violent grief, must affect the fifth pair of nerves in a particular manner, so as to influence the lachrymal glands both directly, and also indirectly, *viz.* by the strong convulsions produced in the muscles of the eyes and face. The membranes of the *fauces* and nose are likewise affected in grief, as is evident from the sensations in the *fauces*, and tip of the nose; and thus vibrations may run to the lachrymal glands through the *ductus ad nasum*, and lachrymal points, as observed before in irritations from sternutatories, &c. Young children may not shed tears freely, because very great and general

disorders of the brain, and its influence over the fifth pair of nerves, do not take place till intellectual aggregates are formed. And the like reason may hold in respect of brutes.

The actions of sobbing and weeping are therefore, in part, deducible from association; *i. e.* are not merely automatic, in the first sense of that word. Agreeably to which, they are in certain cases manifestly subject to the voluntary power. Thus, some persons can, by introducing imaginary scenes of compassion and sorrow, so far agitate the brain, as to bring on the actions of sobbing and weeping, though not in the same degree, as when they arise from a strong real mental cause. They may likewise be caught by infection, from others, as laughter, and most of our other semi-voluntary and voluntary actions, are; which is another argument of their dependence on association.

PROP. LXXVI.—*To examine how far convulsive Motions of various Kinds, and the Actions of Yawning and Stretching in particular, are agreeable to the foregoing Theory.*

SINCE strong vibrations must, according to the foregoing theory, descend at once into the whole muscular system in general convulsions, we must seek for a cause of sufficient extent for this purpose. Now there seem to be three kinds of vibrations, which may answer this condition: first, violent vibrations in the brain. Secondly, violent ones at the skin, suddenly checked. Thirdly, violent ones in the bowels or *uterus*, suddenly checked also, and thence running instantaneously over the whole nervous system by means of the intercostal, or, as Winslow justly calls it, the great sympathetic nerve.

Convulsions from compressions and inflammations of the brain, and most of those which are termed epileptic, seem to be of the first kind. In epilepsies the irregular vibrations, excited in the medullary substance of the brain, are perhaps so violent, as first to make the small particles attract each other, and thus, by checking themselves, to extinguish all sense and motion. However, they may return after a short time, and descend into the whole muscular system.

The stretchings and yawnings which happen in ague-fits, in going to sleep and waking, the startings to which some persons are subject in going to sleep, and the convulsive tremors and rigidity in ague-fits, seem to be of a second kind, or to arise from a sudden check of vibrations at the skin. For in agues the surface is chilled, as it is also by the least motions in going to sleep, or waking. Agreeably to this, it may be observed, that, upon stepping into a cold bed, one is disposed to general convulsions, like those of stretching. Yawning may also depend in part upon a like check of violent vibrations in the mouth and *fauces*; for it is a motion excited in the neighbourhood, and is observed to accompany sickness.

The startings and convulsions which happen to children from gripes, to women from disorders of the *uterus*, and to all persons in general from certain poisons, seem to be of the third kind, or to arise from vigorous vibrations in the *abdomen*, suddenly checked, and running into the whole system by means of the intercostal nerve.

It has been observed already, that convulsive motions are apt to return from less and less causes perpetually, on account of the vestiges which they leave of themselves, and the power of associated circumstances. I will add here, that seeing a person in convulsions is apt to occasion them in such as are of nervous and irritable frames; and that there is reason to believe, that some persons, who have been enthusiasts or impostors, have been able to throw themselves into convulsions by a semi-voluntary power, and particularly, as it seems, by introducing strong ideas, and internal feelings.

It is commonly observed, that yawning is apt to infect a whole company, after one person in it has set the example; which is a manifest instance of the influence of association over motions originally automatic.

PROP. LXXVII.—*To examine how far the Motions, that are most perfectly voluntary, such as those of Walking, Handling, and Speaking, with the voluntary Power of suspending them, and their being formed according to Patterns set by those with whom we converse, are agreeable to the foregoing Theory.*

It was necessary to deliver many things which properly relate to this proposition under the twenty-first, in order to make the derivation of voluntary motion from automatic, by means of association, in some measure intelligible to the reader. I will now resume the subject, and add what I am able for the full explication and establishment of the theory proposed.

Walking is the most simple of the three kinds of voluntary motion here mentioned, being common to the brute creation with man, whereas handling and speaking are, in a manner, peculiar to him. His superiority in this respect, when compared with the superiority of his mental faculties, agrees well with the hypothesis here advanced concerning handling and speaking, *viz.* their dependence on ideas, and the power of association.

The new-born child is unable to walk on account of the want of strength to support his body, as well as of complex and de-complex motory vibratiuncles, generated by association, and depending upon sensations and ideas by association also. As he gets strength, he advances likewise in the number and variety of compound motions of the limbs, their species being determined by the nature of the articulations, the position of the muscles, the automatic motions excited by friction, accidental flexures and extensions made by the nurse, &c. When he is tolerably

perfect in these rudiments of walking, the view of a favourite plaything will excite various motions in the limbs; and thus if he be set upon his legs, and his body carried forward by the nurse, an imperfect attempt to walk follows of course. It is made more perfect gradually by his improvements in the rudiments, by the nurse's moving his legs alternately in the proper manner, by his desire of going up to persons, playthings, &c. and thence repeating the process which has succeeded (for he makes innumerable trials, both successful and unsuccessful;) and by his seeing others walk, and endeavouring to imitate them.

It deserves notice here, that in the limbs, where the motions are most perfectly voluntary, all the muscles have antagonists, and often such as are of nearly equal strength with themselves; also, that the muscles of the limbs are not much influenced at first by common impressions made on the skin, and scarce at all when the child is so far advanced as to get a voluntary power over them. For these things facilitate the generation of the voluntary power, by making the muscles of the limbs chiefly dependent on the vibrations which descend from the brain, and also disposing them to act from a small balance in favour of this or that set of antagonists.

When the child can walk up to an object that he desires to walk up to, the action may be termed voluntary, *i. e.* the use of language will then justify this appellation. But it appears from the reasoning here used, that this kind and degree of voluntary power over his motions is generated by proper combinations and associations of the automatic motions, agreeably to the corollaries of the twentieth proposition. Voluntary powers may therefore result from association, as is asserted in these papers.

When he is arrived at such a perfection in walking, as to walk readily upon being desired by another person, the action is esteemed still more voluntary. One reason of which is, that the child, in some cases, does not walk when desired, whilst yet the circumstances are apparently the same as when he does. For here the unapparent cause of walking, or not walking, is *will*. However, it follows from this theory, that all this is still owing to association, or to something equally suitable to the foregoing theory; *e. g.* to the then present strength or weakness of the association of the words of the command with the action of walking, to its proceeding from this or that person, in this or that manner, to the child's being in an active or inactive state, attentive or inattentive, disposed by other circumstances to move as directed, or to move in a different way, &c. a careful observation of the fact will always shew, as far as is reasonably to be expected in so nice a matter, that when children do different things, the real circumstances, natural or associated, are proportionably different, and that the state of mind called *will* depends upon this difference. This degree of

voluntary power is therefore, in like manner, of an acquired nature.

Suppose an adult to walk in order to shew his perfectly voluntary power; still his selecting this instance is owing to one association, and his performing the action to another, *viz.* to the introduction of the audible idea of the word, the visible one of the action, &c.

Walking passes into the secondarily automatic state more perfectly perhaps than any other action; for adults seldom exert any degree of volition here, sufficient to affect the power of consciousness or memory for the least perceptible moment of time. Now this transition of walking, from its voluntary to its secondarily automatic state, must be acknowledged by all to proceed merely from association. And it seems to follow by parity of reason, that the transition of primarily automatic actions into voluntary ones, may be merely from association also, since it is evident, that association has at least a very great and extensive influence there.

The complex artificial motions of the lower limbs, used in the several kinds of dancing, bear nearly the same relation to the common motions used in walking forwards, backwards, upwards, downwards, and sideways, as these common motions do to the simple rudiments above mentioned, such as the flexion and extension of the ankle or knee. Since therefore the voluntary and secondarily automatic power of dancing are plainly the result of association, why may we not suppose the same of the common motions in walking, both in their voluntary and secondarily automatic state? In learning to dance, the scholar desires to look at his feet and legs, in order to judge by seeing when they are in a proper position. By degrees he learns to judge of this by feeling; but the visible idea left partly by the view of his master's motions, partly by that of his own, seems to be the chief associated circumstance, that introduces the proper motions. By farther degrees these are connected with each other, with the music, and with other more and more remote circumstances.

I have already shewn in what manner children learn the voluntary and secondarily automatic power of grasping. How they learn the various complex motions, by which they feed and dress themselves, &c. also how children and adults learn to write, to practise manual arts, &c. and in what senses and degrees all these actions are voluntary, and secondarily automatic, and yet still remain as purely mechanical as the primarily automatic actions are, may now be understood from what has been already delivered under this proposition. The method of playing upon musical instruments has also been explained, so as to concur in establishing the same conclusions.

In like manner, the account given of the action of speaking might now be completed, and extended to all the modes of it,

vulgar and artificial; and to singing, with its modes. I will add a few words concerning stammering and the loss of speech by palsies.

Stammering seems generally to arise from fear, eagerness, or some violent passion, which prevents the child's articulating rightly, by the confusion which it makes in the vibrations that descend into the muscular system; so that, finding himself wrong, he attempts again and again, till he hits upon the true sound. It does not begin therefore in general, till children are of an age to distinguish right from wrong in respect of pronunciation, and to articulate with tolerable propriety. A nervous disorder of the muscles of speech may have a like effect. When the trick of stammering has once begun to take place in a few words, it will extend itself to more and more from very slight resemblances, and particularly to all the first words of sentences, because there the organs pass in an instant from inactivity to action; whereas the subsequent parts of words and sentences may follow the foregoing from association; just as, in repeating *memoriter*, one is most apt to hesitate at the first word in each sentence.

A defect of memory from passion, natural weakness, &c. so that the proper word does not occur readily, occasions stammering also. And, like all other modes of speaking, it is caught, in some cases, by imitation.

A palsy of the organs of speech may be occasioned in the same manner as any other palsy; and yet the muscles of the lips, cheeks, tongue, and *fauces*, may still continue to perform the actions of mastication and deglutition sufficiently well, because these actions are simpler than that of speech, and are also excited by sensations, which have an original influence over them.

A defect of memory may also destroy the power of speaking, in great measure, though the organs be not much affected in a paralytical way. Thus a person who plays well upon a harpsichord, may by some years' disuse become unable to play at all, though the muscles of his hands be in a perfect state, merely because his memory, and the associations of the motions of his fingers, with the sight of notes, with the ideas of sounds, or with one another, are obliterated by distance of time, and disuse.

The suspension of an action may be performed two ways, as before-mentioned; *viz.* either by putting the muscles concerned in it into a languid inactive state, or by making the antagonists act with vigour. In the first case, the whole limb is put into a state of relaxation, and extreme flexibility; in the last, into a state of rigidity. The voluntary power of the first kind is obtained by associations with the languor that arises from fatigue, heat, sleepiness, &c. that of the last from the general tension of the muscles, which happens in pain, and violent emotions of mind. Children improve in both these kinds of voluntary power

by repeated trials, as occasion requires, by imitation, desire, &c. But they are both difficult for some time. Thus we may observe, that children cannot let their heads or eyelids fall from their mere weight, nor stop themselves in running or striking, till a considerable time after they can raise the head, or bend it, open the eyes, or shut them, run or strike, by a voluntary power.

Imitation is a great source of the voluntary power, and makes all the several modes of walking, handling, and speaking, conformable to those of the age and nation in which a person lives in general, and to those of the persons with whom he converses in particular. Besides the two sources already mentioned, Prop. XXI., *viz.* the sight of the child's own actions, and the sound of his own words, it has many others. Some of these are the resemblance which children observe between their own bodies, with all the functions of them, and those of others; the pleasures which they experience in and by means of all motions, *i. e.* imitations; the directions and encouragements given to them upon this head; the high opinions which they form of the power and happiness of adults; and their consequent desire to resemble them in these, and in all their associates. Imitation begins in the several kinds of voluntary actions about the same time, and increases not only by the sources alleged, but also by the mutual influences of every instance of it over every other, so that the velocity of its growth is greatly accelerated for some time. It is of the highest use to children in their attainment of accomplishments, bodily and mental. And thus every thing, to which mankind have a natural tendency, is learnt much sooner in society, than the mere natural tendency would beget it; and many things are learnt so early, and fixed so deeply, as to appear parts of our nature, though they be mere derivatives and acquisitions.

It is remarkable that apes, whose bodies resemble the human body more than those of any other brute creature, and whose intellects also approach nearer to ours, which last circumstance may, I suppose, have some connexion with the first, should likewise resemble us so much in the faculty of imitation. Their aptness in handling is plainly the result of the shape and make of their fore legs, and their intellects together, as in us. Their peculiar chattering may perhaps be some attempt towards speech, to which they cannot attain, partly from the defect in the organs, partly, and that chiefly, from the narrowness of their memories, apprehensions, and associations; for they seem not to understand words to any considerable degree. Or may not their chattering be an imitation of laughter?

Parrots appear to have far less intellect than apes, but a more distinguishing ear, and like other birds, a much greater command of the muscles of the throat. Their talk seems to be almost devoid of all proper connexion with ideas. However, in respect of sounds, they imitate as much as children, or as apes in

respect of other actions. And indeed the talk of children, by out-running their understandings in many things, very much resembles that of parrots.

As we express our inward sentiments by words, so we do also by gestures, and particularly by the muscles of the face. Here, again, association and imitation display themselves. This dumb show prevails more in the hotter climates, where the passions are more impetuous, than in these northern ones. It is also probable, that the narrowness and imperfection of the ancient languages made it more necessary and prevalent in ancient times. Deaf persons have an extraordinary aptness both in learning and decyphering this, as might well be expected. The imitation of manners and characters by dumb show is often more striking than any verbal description of them.

SECT. VIII.

THE RELATION WHICH THE FOREGOING THEORY BEARS TO THE ART OF PHYSIC.

PROP. LXXVIII.—*The Art of Physic affords many proper Tests of the Doctrines of Vibrations and Association; and may receive considerable Improvement from them, if they be true.*

THIS proposition may appear from several hints to that purpose, which have been already given. But it will be more fully manifest, if I give a short view of the *data* and *quæsitæ* in the art of physic.

Now the general problem, which comprehends the whole art, is,

Having the Symptoms given, to find the Remedy.

This problem may be solved in some cases empirically and directly by the histories of distempers, and of their cures. But then there are other cases, and those not a few, to which the learning and experience of the most able physicians either cannot find histories sufficiently similar, or none where the event was successful. Hence it is necessary to attempt the solution of the general problem rationally and indirectly, by dividing it into the two following less comprehensive and consequently more manageable problems; *viz.*

First, *Having the symptoms given, to find the deviation of the body from its natural state.*

Secondly, *Having this deviation given, to find the remedy.*

It is proper also to invert these two problems, and to inquire, First, *Having the deviation given, what the symptoms must be.*

Secondly, *Having the manner of operation of a successful remedy given, what the deviation must be.*

I here use the words *symptoms, deviation, and remedy*, in the most general sense possible, for the sake of brevity.

Now it is very evident, that the doctrine of vibrations, or some other better doctrine, which teaches the law of action of the nervous system, has a close connexion with all these last four problems. For the nerves enter every part, as well as the blood-vessels; and the brain has as great a share in all the natural functions of the parts, and its disorders, in all their disorders, as the heart, and its disorders, can have; and much more than any other part, besides the heart.

Farther, if the doctrine of association be the necessary consequence of the doctrine of vibrations, in any such manner as I have proposed above, Prop. IX. and XI. it must have a most intimate connexion with the theory of nervous distempers, and some with that of others, on account of the just-mentioned dependence of all the parts on the brain. Or, if we separate these doctrines, still, if that of association be true, of which I suppose there is no doubt, it cannot but be of great use for explaining those distempers in which the mind is affected.

And it seems to me, that agreeably to this, the distempers of the head, spasmodic ones, the effects of poisonous bites and stings, which, as Dr. Mead justly observes, are more exerted upon the nerves than on the blood, receive much light from the doctrine of vibrations, and, in return, confirm it; and that all the disorders of the memory, fancy, and mind, do the same in respect of the doctrine of association.

I do not mean to intimate here, that the rational and indirect solution of the general problem, which comprehends the art of physic, is preferable to the empirical and direct one, where this is to be had; but only, since this cannot be had always, that we ought to proceed in an explicit and scientific manner, rather than in a confused and popular one. For where practice is silent, physicians must and will have recourse to some theory, good or bad. And if they do not acquaint themselves with the real structure and functions of the parts, with the sensible qualities and operations of medicines, and with the most probable method of explaining both the symptoms of distempers, and the operations of medicines, they must fancy something in the place of these, and reason from such false imaginations, or perhaps from the mere agreements, oppositions, and secondary ideas, of words. The history of diseases, and their cures, is the basis of all; after this come anatomical examinations of the body, both in its natural and morbid states; and last of all, pharmacy; these three answering respectively to the general problem, and the two subordinate ones above-mentioned. And if we reason

at all upon the functions and disorders of the parts, and the effects of medicines upon the body, so important an organ as the brain must not be left out entirely.

It may not be amiss to add here, that as all the natural functions tend to the welfare of the body, so there is a remarkable tendency in all the disorders of the body to rectify themselves. These two tendencies, taken together, make what is called nature by physicians; and the several instances of them, with their limits, dangers, ill consequences, and deviations in particular cases, deserve the highest attention from physicians, that so they may neither interrupt a favourable crisis, nor concur with a fatal one. Stahl and his followers suppose, that these tendencies arise from a rational agent presiding over the fabric of the body, and producing effects that are not subject to the laws of mechanism. But this is *gratis dictum*; and the plain traces of mechanism, which appear in so many instances, natural and morbid, are highly unfavourable to it. And all the evidences for the mechanical nature of the body or mind are so many encouragements to study them faithfully and diligently, since what is mechanical *may* both be understood and remedied.

CHAP. III.

CONTAINING A PARTICULAR APPLICATION OF THE FOREGOING THEORY TO THE PHENOMENA OF IDEAS, OR OF UNDERSTANDING, AFFECTION, MEMORY, AND IMAGINATION.

SECT. I.

WORDS, AND THE IDEAS ASSOCIATED WITH THEM.

PROP. LXXIX.—*Words and Phrases must excite Ideas in us by Association, and they excite Ideas in us by no other Means.*

WORDS may be considered in four lights.

First, As impressions made upon the ear.

Secondly, As the actions of the organs of speech.

Thirdly, As impressions made upon the eye by characters.

Fourthly, As the actions of the hand in writing.

We learn the use of them in the order here set down. For children first get an imperfect knowledge of the meaning of the words of others; then learn to speak themselves; then to read; and, lastly, to write.

Now it is evident, that in the first of these ways many sensible impressions, and internal feelings, are associated with particular words and phrases, so as to give these the power of raising the corresponding ideas; and that the three following ways increase and improve this power, with some additions to and variations of the ideas. The second is the reverse of the first, and the fourth of the third. The first ascertains the ideas belonging to words and phrases in a gross manner, according to their usage in common life. The second fixes this, and makes it ready and accurate; having the same use here as the solution of the inverse problem has in other cases in respect of the direct one. The third has the same effect as the second; and also extends the ideas and significations of words and phrases, by new associations; and particularly by associations with other words, as in definitions, descriptions, &c. The advancement of the arts and

sciences is chiefly carried on by the new significations given to words in this third way. The fourth by converting the reader into a writer, helps him to be expert in distinguishing, quick in recollecting, and faithful in retaining, these new significations of words, being the inverse of the third method, as just now remarked. The reader will easily see, that the action of the hand is not an essential in this fourth method. Composition by persons born blind has nearly the same effect. I mention it as being the common attendant upon composition, as having a considerable use deducible from association, and as making the analogy between the four methods more conspicuous and complete.

This may suffice, for the present, to prove the first part of the proposition; *viz.* that words and phrases must excite ideas in us by association. The second part, or that they excite ideas in us by no other means, may appear at the same time, as it may be found upon reflection and examination, that all the ideas which any word does excite are deducible from some of the four sources above-mentioned, most commonly from the first or third.

It may appear also from the instances of the words of unknown languages, terms of art not yet explained, barbarous words, &c. of which we either have no ideas, or only such as some fancied resemblance, or prior association, suggests.

It is highly worthy of remark here, that articulate sounds are by their variety, number, and ready use, particularly suited to signify and suggest, by association, both our simple ideas, and the complex ones formed from them, according to the twelfth proposition.

COR. It follows from this proposition, that the arts of logic and rational grammar depend entirely on the doctrine of association. For logic, considered as the art of thinking or reasoning, treats only of such ideas as are annexed to words; and, as the art of discoursing, it teaches the proper use of words in a general way, as grammar does in a more minute and particular one.

PROP. LXXX. — *To describe the Manner in which Ideas are associated with Words, beginning from Childhood.*

THIS may be done by applying the doctrine of association, as laid down in the first chapter, to words, considered in the four lights mentioned under the last proposition.

First, then, The association of the names of visible objects, with the impressions which these objects make upon the eye, seems to take place more early than any other, and to be effected in the following manner: the name of the visible object, the nurse, for instance, is pronounced and repeated by the attendants to the child, more frequently when his eye is fixed upon the nurse, than when upon other objects, and much more so than when upon any particular one. The word *nurse* is also sounded

in an emphatical manner, when the child's eye is directed to the nurse with earnestness and desire. The association therefore of the sound *nurse*, with the picture of the nurse upon the *retina*, will be far stronger than that with any other visible impression, and thus overpower all the other accidental associations, which will also themselves contribute to the same end by opposing one another. And when the child has gained so much voluntary power over his motions, as to direct his head and eyes towards the nurse upon hearing her name, this process will go on with an accelerated velocity. And thus, at last, the word will excite the visible idea readily and certainly.

The same association of the picture of the nurse in the eye with the sound *nurse*, will, by degrees, overpower all the accidental associations of this picture with other words, and be so firmly cemented at last, that the picture will excite the audible idea of the word. But this is not to our present purpose. I mention it here as taking place at the same time with the foregoing process, and contributing to illustrate and confirm it. Both together afford a complete instance for the tenth and eleventh propositions, *i. e.* they shew, that when the impressions *A* and *B* are sufficiently associated, *A* impressed alone will excite *b*, *B* impressed alone will excite *a*.

Secondly, This association of words with visible appearances, being made under many particular circumstances, must affect the visible ideas with a like particularity. Thus the nurse's dress, and the situation of the fire in the child's nursery, make part of the child's ideas of his nurse and fire. But then as the nurse often changes her dress, and the child often sees a fire in a different place, and surrounded by different visible objects, these opposite associations must be less strong than the part which is common to them all; and consequently we may suppose, that while his idea of that part which is common, and which we may call essential, continues the same, that of the particularities, circumstances, and adjuncts, varies. For he cannot have any idea, but with some particularities in the non-essentials.

Thirdly, When the visible objects impress other vivid sensations besides those of sight, such as grateful or ungrateful tastes, smells, warmth, or coldness, with sufficient frequency, it follows from the foregoing theory that these sensations must leave traces, or ideas, which will be associated with the names of the objects, so as to depend upon them. Thus an idea, or nascent perception, of the sweetness of the nurse's milk will rise up in that part of the child's brain which corresponds to the nerves of taste, upon his hearing her name. And hence the whole idea belonging to the word *nurse* now begins to be complex, as consisting of a visible idea, and an idea of taste. And these two ideas will be associated together, not only because the word raises them both, but also because the original sensations are. The strongest may therefore assist in raising the weakest. Now, in common cases,

the visible idea is strongest, or occurs most readily at least; but, in the present instance, it seems to be otherwise. We might proceed in like manner to shew the generation of ideas more and more complex, and the various ways by which their parts are cemented together, and all made to depend on the respective names of the visible objects. But what has been said may suffice to shew what ideas the names of visible objects, proper and appellative, raise in us.

Fourthly, We must, however, observe, in respect of appellatives, that sometimes the idea is the common compound result of all the sensible impressions received from the several objects comprised under the general appellation; sometimes the particular idea of some one of these, in great measure at least, *viz.* when the impressions arising from some one are more novel, frequent, and vivid, than those from the rest.

Fifthly, The words denoting sensible qualities, whether substantive or adjective, such as *whiteness*, *white*, &c. get their ideas in a manner which will be easily understood from what has been already delivered. Thus the word *white*, being associated with the visible appearance of milk, linen, paper, gets a stable power of exciting the idea of what is common to all, and a variable one, in respect of the particularities, circumstances, and adjuncts. And so of other sensible qualities.

Sixthly, The names of visible actions, as walking, striking, &c. raise the proper visible ideas by a like process. Other ideas may likewise adhere in certain cases, as in those of tasting, feeling, speaking, &c. Sensible perceptions, in which no visible action is concerned, as hearing, may also leave ideas dependent on words. However, some visible ideas generally intermix themselves here. These actions and perceptions are generally denoted by verbs, though sometimes by substantives.

And we may now see in what manner ideas are associated with nouns, proper and appellative, substantive and adjective, and with verbs, supposing that they denote sensible things only. Pronouns and particles remain to be considered. Now, in order to know their ideas and uses, we must observe,

Seventhly, That as children may learn to read words not only in an elementary way, *viz.* by learning the letters and syllables of which they are composed, but also in a summary one, *viz.* by associating the sound of entire words, with their pictures, in the eye; and must, in some cases, be taught in the last way, *i. e.* wheresoever the sound of the word deviates from that of its elements; so both children and adults learn the ideas belonging to whole sentences many times in a summary way, and not by adding together the ideas of the several words in the sentence. And wherever words occur, which, separately taken, have no proper ideas, their use can be learnt in no other way but this. Now pronouns and particles, and many other words, are of this kind. They answer, in some measure, to *x*, *y*, and *z*, or the

unknown quantities in algebra, being determinable and decypherable, as one may say, only by means of the known words with which they are joined.

Thus *I walk* is associated at different times with the same visible impression as *nurse walks, brother walks, &c.* and therefore can suggest nothing permanently for a long time but the action of walking. However the pronoun *I*, in this and innumerable other short sentences, being always associated with the person speaking, as *thou* is with the person spoken to, and *he* with the person spoken of, the frequent recurrency of this teaches the child the use of the pronouns, *i. e.* teaches him what difference he is to expect in his sensible impressions according as this or that pronoun is used; the infinite number of instances, as one may say, making up for the infinitely small quantity of information, which each, singly taken, conveys.

In like manner, different particles, *i. e.* adverbs, conjunctions, and prepositions, being used in sentences, where the substantives, adjectives, and verbs, are the same, and the same particles, where these are different, in an endless recurrency, teach children the use of the particles in a gross general way. For it may be observed, that children are much at a loss for the true use of the pronouns and particles for some years, and that they often repeat the proper name of the person instead of the pronoun; which confirms the foregoing reasoning. Some of the inferior parts or particles of speech make scarce any alteration in the sense of the sentence, and therefore are called expletives. The several terminations of the Greek and Latin nouns and verbs are of the nature of pronouns and particles.

Eighthly, The attempts which children make to express their own wants, perceptions, pains, &c. in words, and the corrections and suggestions of the attendants, are of the greatest use in all the steps that we have hitherto considered, and especially in the last, regarding the pronouns and particles.

Ninthly, Learning to read helps children much in the same respects; especially as it teaches them to separate sentences into the several words which compound them; which those who cannot read are scarce able to do, even when arrived at adult age.

Thus we may see, how children and others are enabled to understand a continued discourse relating to sensible impressions only, and how the words in passing over the ear must raise up trains of visible and other ideas by the power of association. Our next inquiry must be concerning the words that denote either intellectual things, or collections of other words.

Tenthly, The words that relate to the several passions of love, hatred, hope, fear, anger, &c. being applied to the child at the times when he is under the influence of these passions, get the power of raising the miniatures or ideas of these passions, and also of the usual associated circumstances. The application of

the same words to others helps also to annex the ideas of the associated circumstances to them, and even of the passions themselves, both from the infectiousness of our natures, and from the power of associated circumstances to raise the passions. However, it is to be noted, that the words denoting the passions do not, for the most part, raise up in us any degree of the passions themselves, but only the ideas of the associated circumstances. We are supposed to understand the continued discourses into which these words enter sufficiently, when we form true notions of the actions, particularly the visible ones attending them.

Eleventhly, The names of intellectual and moral qualities and operations, such as fancy, memory, wit, dulness, virtue, vice, conscience, approbation, disapprobation, &c. stand for a description of these qualities and operations; and therefore, if dwelt upon, excite such ideas as these descriptions in all their particular circumstances do. But the common sentences, which these words enter, pass over the mind too quick, for the most part, to allow of such a delay. They are acknowledged as familiar and true, and suggest certain associated visible ideas, and nascent internal feelings, taken from the descriptions of these names, or from the words, which are usually joined with them in discourses or writings.

Twelfthly, There are many terms of art in all the branches of learning, which are defined by other words, and which therefore are only compendious substitutes for them. The same holds in common life in numberless instances. Thus riches, honours, pleasures, are put for the several kinds of each. Such words sometimes suggest the words of their definitions, sometimes the ideas of these words, sometimes a particular species comprehended under the general term, &c. But, whatever they suggest, it may be easily seen, that they derive the power of doing this from association.

Thirteenthly, There are many words used in abstract sciences, which can scarce be defined or described by any other words; and yet, by their grammatical form, seem to be excluded from the class of particles. Such are identity, existence, &c. The use of these must therefore be learnt as that of the particles is. And indeed children learn their first imperfect notions of all the words considered in this and the three last paragraphs chiefly in this way; and come to precise and explicit ones only by means of books, as they advance to adult age, or by endeavouring to use them properly in their own deliberate compositions.

This is by no means a full or satisfactory account of the ideas which adhere to words by association. For the author perceives himself to be still a mere novice in these speculations; and it is difficult to explain words to the bottom by words; perhaps impossible. The reader will receive some addition of light and evidence in the course of this section; also in the next, in which I shall treat of propositions and assent. For our assent to pro-

positions, and the influence which they have over our affections and actions, make part of the ideas that adhere to words by association; which part, however, could not properly be considered in this section.

COR. I. It follows from this proposition, that words may be distinguished into the four classes mentioned under the twelfth proposition.

1. Such as have ideas only.
2. Such as have both ideas and definitions.
3. Such as have definitions only.
4. Such as have neither ideas nor definitions.

Under definition I here include description, or any other way of explaining a word by other words, excepting that by a mere synonymous term; and I exclude from the number of ideas the visible idea of the character of a word, and the audible one of its sound; it being evident, that every word heard may thus excite a visible idea, and every word seen an audible one. I exclude also all ideas that are either extremely faint, or extremely variable.

It is difficult to fix precise limits to these four classes, so as to determine accurately where each ends, and the next begins; and, if we consider these things in the most general way, there is perhaps no word which has not both an idea and a definition, *i. e.* which is not attended by some one or more internal feelings occasionally, and which may not be explained, in some imperfect manner at least, by other words. I will give some instances of words which have the fairest right to each class.

The names of simple sensible qualities are of the first class. Thus *white, sweet, &c.* excite ideas; but cannot be defined. It is to be observed here, that this class of words stands only for the stable part of the ideas respectively, not for the several variable particularities, circumstances, and adjuncts, which intermix themselves here.

The names of natural bodies, animal, vegetable, mineral, are of the second class; for they excite aggregates of sensible ideas, and at the same time may be defined (as appears from the writings of natural historians) by an enumeration of their properties and characteristics. Thus likewise geometrical figures have both ideas and definitions. The definitions in both cases are so contrived as to leave out all the variable particularities of the ideas, and to be also more full and precise, than the ideas generally are in the parts that are of the permanent nature.

Algebraic quantities, such as roots, powers, surds, &c. belong to the third class, and have definitions only. The same may be said of scientific terms of art, and of most abstract general terms, moral, metaphysical, vulgar: however, mental emotions are apt to attend some of these even in passing slightly over the ear; and these emotions may be considered as ideas belonging to the terms respectively. Thus the very words, *gratitude, mercy,*

cruelty, treachery, &c. separately taken, affect the mind; and yet, since all reasoning upon them is to be founded on their definitions, as will be seen hereafter, it seems best to refer them to this third class.

Lastly, the particles *the, of, to, for, but, &c.* have neither definitions nor ideas.

COR. II. This matter may be illustrated by comparing language to geometry and algebra, the two general methods of expounding quantity, and investigating all its varieties from previous *data*.

Words of the first class answer to propositions purely geometrical, *i. e.* to such as are too simple to admit of algebra; of which kind we may reckon that concerning the equality of the angles at the basis of an Isosceles triangle.

Words of the second class answer to that part of geometry which may be demonstrated either synthetically or analytically; either so that the learner's imagination shall go along with every step of the process painting out each line, angle, &c. according to the method of demonstration used by the ancient mathematicians; or so that he shall operate entirely by algebraic quantities and methods, and only represent the conclusion to his imagination, when he is arrived at it, by examining then what geometrical quantities the ultimately resulting algebraical ones denote. The first method is in both cases the most satisfactory and affecting, the last the most expeditious, and not less certain, where due care is taken. A blind mathematician must use words in the last of these methods, when he reasons upon colours.

Words of the third class answer to such problems concerning quadratures, and rectifications of curves, chances, equations of the higher orders, &c. as are too perplexed to be treated geometrically.

Lastly, words of the fourth class answer to the algebraic signs for addition, subtraction, &c. to indexes, coefficients, &c. These are not algebraic quantities themselves; but they alter the import of the letters that are; just as particles vary the sense of the principal words of a sentence, and yet signify nothing of themselves.

Geometrical figures may be considered as representing all the modes of extension in the same manner as visible ideas do visible objects; and consequently the names of geometrical figures answer to the names of these ideas. Now, as all kinds of problems relating to quantity might be expounded by modes of extension, and solved thereby, were our faculties sufficiently exalted, so it appears possible to represent most kinds of ideas by visible ones, and to pursue them in this way through all their varieties and combinations. But as it seems best in the first case to confine geometry to problems, where extension, and motion, which implies extension, are concerned, using algebraic methods for investigating all other kinds of quantity, so it seems

best also to use visible ideas only for visible objects and qualities, of which they are the natural representatives, and to denote all other qualities by words considered as arbitrary signs. And yet the representation of other quantities by geometrical ones, and of other ideas by visible ones, is apt to make a more vivid impression upon the fancy, and a more lasting one upon the memory. In similes, fables, parables, allegories, visible ideas are used for this reason to denote general and intellectual ones.

Since words may be compared to the letters used in algebra, language itself may be termed one species of algebra; and, conversely, algebra is nothing more than the language which is peculiarly fitted to explain quantity of all kinds. As the letters, which in algebra stand immediately for quantities, answer to the words which are immediate representatives of ideas, and the algebraic signs for addition, &c. to the particles, so the single letters, which are sometimes used by algebraists to denote sums or differences, powers or roots universal of other letters, for brevity and convenience, answer to such words as have long definitions, to terms of art, &c. which are introduced into the sciences for the sake of compendiousness. Now, if every thing relating to language had something analogous to it in algebra, one might hope to explain the difficulties and perplexities attending the theory of language by the corresponding particulars in algebra, where every thing is clear, and acknowledged by all that have made it their study. However, we have here no independent point whereon to stand, since, if a person be disposed to call the rules of algebra in question, we have no way of demonstrating them to him, but by using words, the things to be explained by algebra for that purpose. If we suppose indeed the sceptical person to allow only that simple language, which is necessary for demonstrating the rules of algebra, the thing would be done; and, as I observed just now, it seems impossible to become acquainted with this, and at the same time to disallow it.

COR. III. It will easily appear, from the observations here made upon words, and the associations which adhere to them, that the languages of different ages and nations must bear a great general resemblance to each other, and yet have considerable particular differences; whence any one may be translated into any other, so as to convey the same ideas in general, and yet not with perfect precision and exactness. They must resemble one another, because the phænomena of nature, which they are all intended to express, and the uses and exigences of human life, to which they minister, have a general resemblance. But then, as the bodily make and genius of each people, the air, soil, and climate, commerce, arts, sciences, religion, &c. make considerable differences in different ages and nations, it is natural to expect, that the languages should have proportionable differences in respect of each other.

Where languages have rules of etymology and syntax, that differ greatly, which is the case of the Hebrew compared with Greek or Latin, this will become a new source of difformity. For the rules of etymology and syntax determine the application and purport of words in many cases. Agreeably to which we see that children, while yet unacquainted with that propriety of words and phrases which custom establishes, often make new words and constructions, which, though improper according to common usage, are yet very analogous to the tenor of the language in which they speak.

The modern languages of this western part of the world answer better to the Latin, than according to their original Gothic plans, on this account; inasmuch as not only great numbers of words are adopted by all of them from the Latin, but also because the reading Latin authors, and learning the Latin grammar, have disposed learned men and writers to mould their own languages in some measure after the Latin. And, conversely, each nation moulds the Latin after the idiom of its own language, the effect being reciprocal in all such cases.

In learning a new language, the words of it are at first substitutes for those of our native language; *i. e.* they are associated, by means of these, with the proper objects and ideas. When this association is sufficiently strong, the middle bond is dropped, and the words of the new language become substitutes for, and suggest directly and immediately, objects and ideas; also clusters of other words in the same language.

In learning a new language, it is much easier to translate from it into the native one, than back again; just as young children are much better able to understand the expressions of others, than to express their own conceptions. And the reason is the same in both cases. Young children learn at first to go from the words of others; and those who learn a new language, from the words of that language, to the things signified. And the reverse of this, *viz.* to go from the things signified to the words, must be difficult for a time, from what is delivered concerning successive associations under the tenth and eleventh propositions. It is to be added here, that the nature and connexions of the things signified often determine the import of sentences, though their grammatical analysis is not understood; and that we suppose the person who attempts to translate from a new language is sufficiently expert in the inverse problem of passing from the things signified to the corresponding words of his own language. The power of association is every where conspicuous in these remarks.

COR. IV. It follows also from the reasoning of this proposition, that persons who speak the same language cannot always mean the same things by the same words; but must mistake each other's meaning. This confusion and uncertainty arises from the different associations transferred upon the same words by the

difference in the accidents and events of our lives. It is, however, much more common in discourses concerning abstract matters, where the terms stand for collections of other terms, sometimes at the pleasure of the speaker or writer, than in the common and necessary affairs of life. For here frequent use, and the constancy of the phænomena of nature, intended to be expressed by words, have rendered their sense determinate and certain. However, it seems possible, and even not very difficult, for two truly candid and intelligent persons to understand each other upon any subject.

That we may enter more particularly into the causes of this confusion, and consequently be the better enabled to prevent it, let us consider words according to the four classes above-mentioned.

Now mistakes will happen in the words of the first class, *viz.* such as have ideas only, where the persons have associated these words with different impressions. And the method to rectify any mistake of this kind is for each person to shew with what actual impressions he has associated the word in question. But mistakes here are not common.

In words of the second class, *viz.* such as have both ideas and definitions, it often happens, that one person's knowledge is much more full than another's, and, consequently, his idea and definition much more extensive. This must cause a misapprehension on one side, which yet may easily be rectified by recurring to the definition. It happens also sometimes in words of this class, that a man's ideas, *i. e.* the miniatures excited in his nervous system by the word, are not always suitable to his definition, *i. e.* are not the same with those which the words of the definition would excite. If then this person should pretend, or even design, to reason from his definition, and yet reason from his idea, a misapprehension will arise in the hearer, who supposes him to reason from his definition merely.

In words of the third class, which have definitions only, and no immediate ideas, mistakes generally arise through want of fixed definitions mutually acknowledged, and kept to. However, as imperfect fluctuating ideas, that have little relation to the definitions, are often apt to adhere to the words of this class, mistakes must arise from this cause also.

As to the words of the fourth class, or those which have neither ideas nor definitions, it is easy to ascertain their use by inserting them in sentences, whose import is known and acknowledged; this being the method in which children learn to decypher them: so that mistakes could not arise in the words of this class, did we use moderate care and candour. And, indeed, since children learn the uses of words most evidently without having any *data*, any fixed point at all, it is to be hoped, that philosophers, and candid persons, may learn at last to understand one another with facility and certainty; and get to the very bottom of the connexion between words and ideas.

It seems practicable to make a dictionary of any language, in which the words of that language shall all be explained with precision by words of the same language, to persons who have no more than a gross knowledge of that language. Now this also shews, that, with care and candour, we might come to understand one another perfectly. Thus sensible qualities might be fixed by the bodies, in which they are most eminent and distinct; the names of a sufficient number of these bodies being very well known. After this, these very bodies, and all others, might be defined by their sensible properties; and these two processes would help each other indefinitely, actions might be described from animals already defined, also from the modes of extension, abstract terms defined, and the peculiar use of particles ascertained. And such a dictionary would, in some measure, be a real as well as a nominal one, and extend to things themselves. The writer of every new and difficult work may execute that part of such a dictionary which belongs to his subject; at least in the instances where he apprehends the reader is likely to want it.

COR. V. When words have acquired any considerable power of exciting pleasant or painful vibrations in the nervous system, by being often associated with such things as do this, they may transfer a part of these pleasures and pains upon indifferent things, by being at other times often associated with such. This is one of the principal sources of the several factitious pleasures and pains of human life. Thus, to give an instance from childhood, the words *sweet, good, pretty, fine, &c.*, on the one hand, and the words *bad, ugly, frightful, &c.*, on the other, being applied by the nurse and attendants in the young child's hearing almost promiscuously, and without those restrictions that are observed in correct speaking, the one to all the pleasures, the other to all the pains of the several senses, must by association raise up general pleasant and painful vibrations, in which no one part can be distinguished above the rest; and when applied by farther associations to objects of a neutral kind, they must transfer a general pleasure or pain upon them.

All the words associated with pleasures must also affect each other by this promiscuous application. And the same holds in respect of the words associated with pains. However, since both the original and the transferred pleasures and pains heaped upon different words are different, and in some cases widely so, every remarkable word will have a peculiar internal feeling, or sentiment, belonging to it; and there will be the same relations of affinity, disparity, and opposition, between these internal sentiments, *i. e.* ideas, belonging to words, as between the several *genera* and *species* of natural bodies, between tastes, smells, colours, &c. Many of these ideas, though affording considerable pleasure at first, must sink into the limits of indifference; and some of those which afforded pain at first, into the limits of pleasure. What is here said of words, belongs to clusters of

them, as well as to separate words. And the ideas of all may still retain their peculiarities, by which they are distinguished from each other, after they have fallen below the limits of pleasure into indifference, just as obscure colours, or faint tastes, do.

It is observable, that the mere transit of words expressing strong ideas over the ears of children affects them; and the same thing is true of adults, in a less degree. However, the last have learnt from experience and habit to regard them chiefly, as they afford a rational expectation of pleasure and pain. This cannot be discussed fully, till we come to consider the nature of assent; but it may give some light and evidence to the reasoning of this corollary, just to have mentioned the manner, in which we are at first affected by words.

COR. VI. Since words thus collect ideas from various quarters, unite them together, and transfer them both upon other words, and upon foreign objects, it is evident, that the use of words adds much to the number and complexness of our ideas, and is the principal means by which we make intellectual and moral improvements. This is verified abundantly by the observations that are made upon persons born deaf, and continuing so. It is probable, however, that these persons make use of some symbols to assist the memory, and fix the fancy: and they must have a great variety of pleasures and pains transferred upon visible objects from their associations with one another, and with sensible pleasures of all the kinds; but they are very deficient in this, upon the whole, through the want of the associations of visible objects, and states of mind, &c., with words. Learning to read must add greatly to their mental improvement; yet still their intellectual capacities cannot but remain very narrow.

Persons blind from birth must proceed in a manner different from that described in this proposition, in the first ideas which they affix to words. As the visible ones are wanting, the others, particularly the tangible and audible ones, must compose the aggregates which are annexed to words. However, as they are capable of learning and retaining as great a variety of words as others, or perhaps a greater, *cæteris paribus*, and can associate with them pleasures and pains from the four remaining senses, also use them as algebraists do the letters that represent quantities, they fall little or nothing short of others in intellectual accomplishments, and may arrive even at a greater degree of spirituality and abstraction in their complex ideas.

COR. VII. It follows from this proposition, that, when children or others first learn to read, the view of the words excites ideas only by the mediation of their sounds, with which alone their ideas have hitherto been associated. And thus it is that children and illiterate persons understand what they read best by reading aloud. By degrees, the intermediate link being left out, the written or printed characters suggest the ideas directly and

instantaneously; so that learned men understand more readily by passing over the words with the eye only, since this method, by being more expeditious, brings the ideas closer together. However, all men, both learned and unlearned, are peculiarly affected by words pronounced in a manner suitable to their sense and design; which is still an associated influence.

COR. VIII. As persons, before they learn to read, must have very imperfect notions of the distinction of words, and can only understand language in a gross general way, taking whole clusters of words for one undivided sound, so much less can they be supposed to have any conceptions concerning the nature or use of letters. Now all mankind must have been in this state before the invention of letters. Nay, they must have been farther removed from all conceptions of letters, than the most unlearned persons amongst us, since these have at least heard of letters, and know that words may be written and read by means of them. And this makes it difficult to trace out by what steps alphabetical writing was invented; or is even some presumption that it is not a human invention. To which is to be added, that the analyzing complex articulate sounds into their simple component parts appears to be a problem of too difficult and perplexed a nature for the rude early ages, occupied in getting necessaries, and defending themselves from external injuries, and not aware of the great use of it, even though they had known the solution to be possible and practicable. However, I shall mention some presumptions of a contrary nature under the next proposition.

PROP. LXXXI.—*To explain the Nature of Characters intended to represent Objects and Ideas immediately, and without the Intervention of Words.*

SINCE characters made by the hand are capable of the greatest varieties, they might be fitted by proper associations to suggest objects and ideas immediately, in the same manner as articulate sounds do. And there are some instances of it in common use, which may serve to verify this, and to lead us into the nature of characters standing immediately for objects and ideas. Thus the numeral figures, and the letters in algebra, represent objects, ideas, words, and clusters of words, directly and immediately; the pronunciation of them being of no use, or necessity, in the operations to be performed by them. Thus also musical characters represent sounds and combinations of sounds, without the intervention of words, and are a much more compendious and ready representation than any words can be.

Characters seem to have an advantage over articulate sounds in the representation of visible objects, inasmuch as they might, by their resemblance, even though only a gross one, become rather natural, than mere arbitrary representatives.

They had also an advantage as representatives in general, before the invention of alphabetical writing, since persons could by this means convey their thoughts to each other at a distance.

If we suppose characters to be improved to all that variety and multiplicity which is necessary for representing objects, ideas, and clusters of characters, in the same manner as words represent objects, ideas, and clusters of words, still they might be resolved into simple component parts, and rendered pronounceable by affixing some simple or short sound to each of these simple component parts; just as articulate sounds are painted by being first resolved into their simple component parts, and then having each of these represented by a simple mark or character.

If we suppose the most common visible objects to be denoted both by short articulate sounds, and by short characters bearing some real, or fancied, imperfect resemblance to them, it is evident, that the sound and mark, by being both associated with the visible object, would also be associated with one another; and consequently that the sound would be the name of the mark, and the mark the picture of the sound. And this last circumstance seems to lead to the denoting all sounds by marks, and therefore perhaps to alphabetical writing.

At the same time it must be observed, that the marks would bear different relations of similarity and dissimilarity to one another from those which the corresponding sounds did.

This would happen, according to whatever law the marks were made, but especially if they were resemblances of visible objects. And this, as it seems, would occasion some difficulty and perplexity in representing sounds by marks, or marks by sounds.

PROP. LXXXII.—*To explain the Nature of figurative Words and Phrases, and of Analogy, from the foregoing Theory.*

A FIGURE is a word, which, first representing the object or idea *A*, is afterwards made to represent *B*, on account of the relation which these bear to each other.

The principal relation, which gives rise to figures, is that of likeness; and this may be either a likeness in shape, and visible appearance, or one in application, use, &c. Now it is very evident from the nature of association, that objects which are like to a given one in visible appearance, will draw to themselves the word by which this is expressed. And indeed this is the foundation upon which appellatives are made to stand for so great a number of particulars. Let the word *man* be applied to the particular persons *A*, *B*, *C*, &c. till it be sufficiently associated with them, and it will follow, that the appearance of the new particular person *D* will suggest the word, and be denoted by it. But here there is no figure, because the word *man* is associated

with different particular persons from the first, and that equally or nearly so.

In like manner, the corresponding parts of different animals, *i. e.* the eyes, mouth, breast, belly, legs, lungs, heart, &c. have the same names applied in a literal sense, partly from the likeness of shape, partly from that of use and application. And it is evident, that if we suppose a people so rude in language and knowledge, as to have names only for the parts of the human body, and not to have attended to the parts of the brute creatures, association would lead them to apply the same names to the parts of the brute creatures, as soon as they became acquainted with them. Now here this application would at first have the nature of a figure; but when by degrees any of these words, the eye for instance, became equally applied from the first to the eyes of men and brutes, it would cease to be a figure, and become an appellative name, as just now remarked.

But when the original application of the word is obvious, and remains distinct from the secondary one, as when we say the mouth or ear of a vessel, or the foot of a chair or table, the expression is figurative.

Hence it is plain, that the various resemblances which nature and art afford are the principal sources of figures. However, many figures are also derived from other relations, such as those of cause, effect, opposition, derivation, generality, particularity; and language itself, by its resemblances, oppositions, &c. becomes a new source of figures, distinct from the relations of things.

Most metaphors, *i. e.* figures taken from likeness, imply a likeness in more particulars than one, else they would not be sufficiently definite, nor affect the imagination in a due manner. If the likeness extend to many particulars, the figure becomes implicitly a simile, fable, parable, or allegory.

Many or most common figures pass so far into literal expressions by use, *i. e.* association, that we do not attend at all to their figurative nature. And thus by degrees figurative senses become a foundation for successive figures, in the same manner as originally literal senses.

It is evident, that if a language be narrow, and much confined to sensible things, it will have great occasion of figures: these will naturally occur in the common intercourses of life, and will in their turn, as they become literal expressions in the secondary senses, much augment and improve the language, and assist the invention. All this is manifest from the growth of modern languages, in those parts where they were heretofore particularly defective.

We come now to the consideration of analogy. Now things are said to be analogous to one another, in the strict mathematical sense of the word *analogy*, when the corresponding parts are all in the same ratio to each other. Thus if the several parts of the body in different persons be supposed exactly proportional to

the whole bodies, they might be said to be analogous in the original mathematical sense of that word. But as this restrained sense is not applicable to things, as they really exist, another of a more enlarged and practical nature has been adopted, which may be thus defined. Analogy is that resemblance, and in some cases sameness, of the parts, properties, functions, uses, &c. any or all, of *A* to *B*, whereby our knowledge, concerning *A*, and the language expressing this knowledge, may be applied in the whole, or in part, to *B*, without any sensible, or, at least, any important practical error. Now analogies, in this sense of the word, some more exact and extensive, some less so, present themselves to us every where in natural and artificial things; and thus whole groups of figurative phrases, which seem at first only to answer the purposes of convenience in affording names for new objects, and of pleasing the fancy in the way to be hereafter mentioned, pass into analogical reasoning, and become a guide in the search after truth, and an evidence for it in some degree. I will here set down some instances of analogies of various degrees and kinds.

The bodies of men, women, and children, are highly analogous to each other. This holds equally in respect of every other species of animals; also of the several corresponding parts of animals of the same species, as their flesh, blood, bones, fat, &c. and their properties. Here the words applied to the several analogous things are used in a sense equally literal in respect of all. And the analogy is in most cases so close, as rather to be esteemed a coincidence, or sameness.

In comparing animals of different kinds the analogy grows perpetually less and less, as we take in a greater compass; and consequently our language more and more harsh, when considered as literal, whilst yet it cannot well be figurative in some things, and literal in others; so that new words are generally assigned to those parts which do not sufficiently resemble the corresponding ones. Thus the fore-legs of men and fowls, as we might call them in a harsh, literal, or a highly figurative way, are termed hands and wings respectively. However, in some cases, the same word is used, and considered as a figure; as when the cries of birds and beasts are termed their language. We may also observe, that every part in every animal may, from its resemblance in shape and use to the corresponding parts in several other animals, have a just right to a name, which shall be common to it and them.

What has been said of animals of the same and different kinds holds equally in respect of vegetables. Those of the same kind have the same names applied to the corresponding parts in a literal sense. Those of different kinds have many names common to all used in a literal sense, some new ones peculiar to certain kinds, and some that may be considered as so harsh in a literal sense, that we may rather call them figurative terms.

The same may be said of the mineral kingdom, considered also according to its genera and species.

Animals are also analogous to vegetables in many things, and vegetables to minerals: so that there seems to be a perpetual thread of analogy continued from the most perfect animal to the most imperfect mineral, even till we come to elementary bodies themselves.

Suppose the several particulars of the three kingdoms to be represented by the letters of an alphabet sufficiently large for that purpose. Then we are to conceive, that any two contiguous species, as *A* and *B*, *M* and *N*, are more analogous than *A* and *C*, *M* and *O*, which have one between them. However, since *A* and *B*, *M* and *N*, are not perfectly analogous, this deficiency may be supplied in some things from *C* and *O*, in others from *D* and *P*, &c. so that *M* can have no part, property, &c. but what shall have something quite analogous to it in some species, near or remote, above it or below it, and even in several species. And in cases where the parts, properties, &c. are not rigorously exact in resemblance, there is, however, an imperfect one, which justifies the application of the same word to both: if it approach to perfection, the word may be said to be used in a literal sense; if it be very imperfect, in a figurative one. Thus when the names of parts, properties, &c. are taken from the animal kingdom, and applied to the vegetable, or *vice versá*, they are more frequently considered as figurative, than when transferred from one part of the animal kingdom to another.

In like manner, there seems to be a gradation of analogies respecting the earth, moon, planets, comets, sun, and fixed stars, compared with one another. Or if we descend to the several parts of individuals, animals, vegetables, or minerals, the several organs of sensation are evidently analogous to each other; also the glands, the muscles, the parts of generation, in the different sexes of the same kind, &c. &c. without limits. For the more any one looks into the external natural world, the more analogies, general or particular, perfect or imperfect, will he find every where.

Numbers, geometrical figures, and algebraic quantities, are also mutually analogous without limits. And here there is the exactest uniformity, joined with an endless variety, so that it is always certain and evident how far the analogy holds, and where it becomes a disparity or opposition on one hand, or a coincidence on the other. There is no room for figures here; but the terms must be disparate, opposite, or the same, in a strictly literal sense respectively.

The several words of each particular language, the languages themselves, the idioms, figures, &c. abound also with numerous analogies of various kinds and degrees.

Analogies are likewise introduced into artificial things, houses, gardens, furniture, dress, arts, &c.

The body politic, the body natural, the world natural, the universe ;—The human mind, the minds of brutes on one hand, and of superior beings on the other, and even the Infinite Mind himself ;—the appellations of father, governor, judge, king, architect, &c. referred to GOD ;—the ages of man, the ages of the world, the seasons of the year, the times of the day ;—the offices, professions, and trades, of different persons, statesmen, generals, divines, lawyers, physicians, merchants ;—the terms night, sleep, death, chaos, darkness, &c. also light, life, happiness, &c. compared with each other respectively ; life and death, as applied in different senses to animals, vegetables, liquors, &c.—earthquakes, storms, battles, tumults, fermentations of liquors, law-suits, games, &c. families, bodies politic lesser and greater, their laws, natural religion, revealed religion, &c. &c. afford endless instances of analogies natural and artificial. For the mind being once initiated into the method of discovering analogies, and expressing them, does by association persevere in this method, and even force things into its system by concealing disparities, magnifying resemblances, and accommodating language thereto. It is easy to see, that in the instances last alleged, the terms used are for the most part literal only in one sense, and figurative in all their other applications. They are literal in the sense which was their primary one, and figurative in many or most of the rest. Similes, fables, parables, allegories, &c. are all instances of natural analogies improved and set off by art. And they have this in common to them all, that the properties, beauties, perfections, desires, or defects and aversions, which adhere by association to the simile, parable, or emblem of any kind, are insensibly, as it were, transferred upon the thing represented. Hence the passions are moved to good or to evil. Speculation is turned into practice, and either some important truth felt and realized, or some error and vice gilded over and recommended.

PROP. LXXXIII.—*To apply the foregoing Account of Words and Characters to the Languages and Method of Writing of the first Ages of the World.*

HERE there is a great difficulty through the want of sufficient *data*. I will assume a few of those that appear to me most probable, and just shew the method of applying the doctrine of association to them ; leaving it to learned men, as they become possessed of more and more certain *data*, to make farther advances.

I suppose then, that Adam had some language, with some instinctive knowledge concerning the use of it, as well as concerning divine and natural things, imparted to him by God at his creation. It seems indeed, that God made use of the visible appearances or actions, or perhaps of the several cries of the

brute creatures, as the means whereby he taught Adam their names. But whether this was so, also whether, if it was, any analogous method was taken in respect of the names of other objects, or of ideas, and internal feelings, is an inquiry, in which nothing that yet appears can afford satisfaction.

I suppose, also, that the language which Adam and Eve were possessed of in paradise, was very narrow, and confined in great measure to visible things; God himself condescending to appear in a visible, perhaps in a human shape, to them, in his revelations of himself. It might also be monosyllabic in great measure. They who suppose Adam to be capable of deep speculations, and to have exceeded all his posterity in the subtilty and extent of his intellectual faculties, and consequently in the number and variety of his words, and the ideas belonging to them, have no foundation for this opinion in scripture; nor do they seem to consider, that innocence, and pure unmixed happiness, may exist without any great degrees of knowledge; or that to set a value upon knowledge considered in itself, and exclusively of its tendency to carry us to God, is a most pernicious error, derived originally from Adam's having eaten of the tree of knowledge.

After the fall, we may suppose, that Adam and Eve extended their language to new objects and ideas, and especially to those which were attended with pain; and this they might do sometimes by inventing new words, sometimes by giving new senses to old ones. However, their language would still continue narrow, because they had only one another to converse with, and could not extend their knowledge to any great variety of things; also because their foundation was narrow. For the growth and variations of a language somewhat resemble the increase of money at interest upon interest.

If to these reasons we add the long lives of the antediluvian patriarchs, the want of arts and sciences in the antediluvian world, and the want of leisure through the great labour and fatigue necessary to provide food, clothing, &c. we shall have reason to conjecture, that the whole antediluvian world would speak the same language with Adam, and that without any great additions or alterations. After a hundred or two hundred years, association would fix the language of each person, so that he could not well make many alterations; but he must speak the language of his forefathers till that time, because those to the sixth or seventh generation above him were still living; and consequently he would continue to speak the same language, *i. e.* the Adamic, with few variations, to the last. The narrowness of the languages of barbarous nations may add some light and evidence here.

If we suppose some kind of picture-writing to have been imparted to Adam by God, or to have been invented by him, or by any of his posterity, this might receive more alterations and improvements than language, from the successive generations

of the antediluvians. For the variety of figures in visible objects would suggest a sufficient variety in their characters; the hand could easily execute this; and their permanency would both give the antediluvians distinct ideas of all the original characters, and all their variations, and also fix them in their memory. We may suppose therefore, that though their words and marks would be so associated together (agreeably to what was before observed), as that the word would be the name of the corresponding mark, and the mark the picture of the word in many cases, yet their marks would in some instances extend farther than their words; and consequently, that on this account, as well as because the marks would be similar and different, where the words were not, there would be no alphabetical writing in the antediluvian world.

They might, however, hand down a history of the creation, fall, and principal events, in this picture-writing, attended with a traditional explanation, which might remain uncorrupted and invariable till the deluge. And indeed, if we suppose picture-writing to be of divine original, it will be most probable, that they received a divine direction to do this, and that they would not apply their picture-writing to any other purpose for some time: just as the Israelites afterwards seem to have employed alphabetical writing chiefly for recording the divine dispensations and interpositions.

After the flood, the great change made in the face of things, and in natural bodies, with the appearance perhaps of some entirely new ones, would make some parts of the antediluvian language superfluous, at the same time that it would be greatly defective upon the whole. Hence we may suppose, that the antediluvian language must receive much greater alterations and additions just after the flood, than at any time before. But Noah and his wife, having their words and ideas more firmly associated together than Shem, Ham, and Japheth, and their wives, on account of their superior age, would be far less able to make the requisite changes in their language. Something like this must also take place in respect of their picture-writing, if we suppose there was any such thing in the antediluvian world.

Let us suppose this, and also with Mr. Whiston and Mr. Shuckford, that Noah, his wife, and their postdiluvian posterity, settled early in China, so as to be cut off from Shem, Ham, and Japheth, and their posterity. Here then we may suppose farther, that they would alter and improve their picture-writing, or character, so as to suit it to the new face of things in the postdiluvian world, and to make it grow with the growth of knowledge, more than they would their language, from the greater facility of doing this: for I presume, that the antediluvian language contained but few of the articulate sounds which are now known, and that they could not invent more. Thus their character and language would both of them be the immediate representatives of objects

and ideas ; only the use and application of the character would be much more extensive than that of the language. After some time, some centuries, or even chiliades, suppose, both the character and language would begin to be fixed, to have fewer new marks and words added, and fewer alterations made in the old ones in any given interval of time. The words would also be so firmly associated with the corresponding marks, as to be the names of them, *i. e.* to represent them, as well as the objects or ideas to which they were originally affixed. But then there would be many marks, to which there would be no such names, taken from the names of objects and ideas, on account of the poverty of the language here supposed. They would, however, endeavour to give them some names; and hence a diversity would arise in their language. We may conceive also, that as they separated farther from one another, in multiplying, particular clans would deviate even in the pronunciation of the monosyllabic words of the original language, as in the several dialects of other languages; and consequently deviate still more in the compound names of the marks: but the marks being permanent things, capable of being handed down accurately to the successive generations, and of being conveyed to distant countries, would continue intelligible to all. And thus we may conceive, that the postdiluvian posterity of Noah might all write the same characters, and yet speak different languages; also that their character would be very extensive, and always the immediate representative of objects and ideas, whereas their language would be narrow, and in some cases the immediate representative of the character, and only denote objects and ideas by means of this. And this I take to be the case with the people of China, and the neighbouring countries of Japan, Tonquin, Siam, &c. But I only presume to offer conjectures, not having any knowledge of the character or languages of these countries.

Since the Chinese marks are very numerous, and their simple words very few, whereas our words are very numerous, and our simple marks, or the letters of our alphabet, very few; also since our words are the sole immediate representatives of objects and ideas, our written and printed marks being merely artificial pictures of words; one might suspect, that the Chinese words are, in correspondence to this, merely an artificial enunciation of their character. But I think this not so probable, as the mixed supposition mentioned in the last paragraph. For it cannot be supposed, that any nation should be so far destitute of language, as not to have words for common objects, and internal feelings; or having these, that they should lay them entirely aside, and adopt the artificial names of the marks representing those objects and ideas in their steads. But they might easily adopt names, simple or compound, at first ascribed artificially to marks, whose objects and ideas had before this adoption no names.

That in affixing names artificially to marks, a great diversity

might arise, appears from the great diversity of alphabetical characters expressing the same words. Thus the Hebrew, Samaritan, and Syriac languages, agree nearly in sound and sense, but differ entirely in characters. Thus also, amongst modern languages, several are written in different characters, as English in the common round-hand, in various law-hands, and various short-hands.

Let us now return to Shem, Ham, and Japheth, and their posterity. They must be supposed to proceed in the same manner, in general, as Noah and his immediate posterity, till the confusion of tongues at Babel; excepting that Shem, Ham, and Japheth, with their wives, would be more apt to alter their character and language, and suit them to their present exigences, than Noah and his wife, on account of their being all young persons; also that, being all as it were equal to each other, they might each of them be the authors of certain diversities in the common character and language, and establish them in their respective posterities. However, if Noah be supposed to have continued with them till the division of the earth by God's command, and then only to have departed from his postdiluvian posterity for China, the country assigned to him, whilst Shem, Ham, and Japheth, with their posterity, began to build the tower of Babel in opposition to God's command, then Noah, and all his sons, &c. must be supposed to have suited their character and language to the new world in nearly the same manner.

The confusion of tongues at Babel appears to me to be miraculous for the following reasons.

First, This appears to be the most natural interpretation of the text.

Secondly, Thus the confusion of tongues will correspond to the gift of language imparted to Adam at his creation, which must be supposed; also to the gift of tongues at Pentecost.

Thirdly, Learned men seem to have shewn, that the diversity of ancient languages does by no means favour the supposition of a natural derivation of them all from one original form.

Fourthly, The original plan of the Greek and Latin tongues (which I consider as sister languages derived from the same mother or original plan), appears to have been very uniform, yet with a considerable variety. Now I think this uniformity and variety could scarce be invented and established by rude multitudes, almost entirely occupied in providing necessaries for themselves, and much less as alphabetical writing seems to be of a later date than the diversity of languages. And in fact we do not find, that barbarous nations do by length of time improve their languages so as in any measure to approach to the perfection of the Greek or Latin, or of their common mother. It adds strength to this argument, that the original plan of the Greek and Latin, *i. e.* the rules of etymology and syntax, as grammarians call them, is entirely different from that of the

Hebrew and Arabic (whose original plans agree), though the first colonies, which came by sea into Greece and Italy, came from Palestine and Egypt, *i. e.* from the neighbourhood of countries where Hebrew and Arabic were spoken.

Fifthly, The natural deviation of languages, since history has been clear and certain, does by no means correspond to a supposed natural derivation of all languages from one mother-tongue, especially in so short a time as the interval between the flood and the rise of many different ancient languages. Let the reader here only reflect upon the great difference of the Biblical Hebrew from the ancientest Greek extant, and the small difference of this from modern Greek, or of the Biblical Hebrew from the Rabbinical.

If now the confusion of tongues was miraculous, we may conjecture, from the agreements and disagreements of mother-languages from each other, that it was of the following kind.

First, That the original monosyllabic words of the antediluvian language were incorporated into each new language.

Secondly, That as these words included only few of the articulate sounds of which the human voice is capable, the several families were put upon making new articulations, some having one set, some another, imparted to them.

Thirdly, That each family had a new stock of words given them, consisting partly of old, partly of new articulations; and that this new stock far exceeded the old one in number and variety.

Fourthly, That a new and different etymology and syntax were also communicated to each family.

Fifthly, That there were as many new languages given as there are heads of families mentioned Gen. x.; the confusion of tongues, by which the division of the earth was effected, not happening till Joktan's sons were old enough to be heads of families, though it had been determined and declared by God before. Those families, however, which were derived from the same stock, or had contiguous countries assigned to them, might be inspired with languages that had a proportionable affinity.

Whatever may become of these particular conjectures, I think it highly probable, that the new languages far exceeded the old common one in the number and variety of words; and that the confusion of tongues was by this means a beneficial gift and blessing to mankind, as all God's other chastisements used to be.

We may also see reasons to make us judge, that a diversity of languages is suited to the other circumstances of mankind. For this must prevent the infection of vice from spreading with such rapidity, as it would otherwise have done, had mankind lived together in one large body, and had a free communication with each other by means of the same language.

Diversity of languages does also both help the invention, and correct false judgments. For we think in words, as appears by

the foregoing theory, and invent chiefly by means of their analogies; at the same time that a servile adherence to those of any one language, or the putting words for things, would lead us into many errors. Now diversity of languages does both enlarge the field of invention, and by opposing analogy to analogy preserve us from the prejudices derived from mere verbal agreements. Let me add here, that the abstract terms of logicians, metaphysicians, and schoolmen, which may be considered as a distinct language, have spiritualized men's understandings, and taught them to use words in reasoning, as algebraists do symbols.

Different languages do likewise improve one another, and help one another to grow in some proportion to the advancement in the knowledge of things.

Let us now examine the probable consequences of supposing different languages, and such as were far more copious than the old one, to be given at once miraculously.

First then, The character, which suited the old language very imperfectly, would be still less suited to the new one.

Secondly, The new language might be more copious, and better adjusted to express objects and ideas, than the character. And this I think can scarce be doubted, if we suppose the new languages given miraculously.

Thirdly, The agreement between many of the marks of the character, and the words of the old language, may be supposed likely to put some persons upon denoting the words of the new language by marks. But whether this would necessarily lead to alphabetical writing, is very doubtful. I think not. The first attempts at least would not be alphabetical writing.

Fourthly, Persons of different families, who could not understand one another's language, might yet correspond by the character. However, one may guess from the circumstances of things in ancient times, that this would seldom take place in fact.

Fifthly, This and the convenience of corresponding with persons of the same family at a distance, also the desire of preserving memorials of remarkable events and transactions, might make them continue the use of the character, and improve it, considered as a method of conveying ideas, distinct from that of language. And the character thus separated from the language might give rise to hieroglyphical writing in all its varieties.

Sixthly, The patriarchs after the flood in the line of Shem might convey in succession the history of the creation, fall, deluge, calling of Abraham, &c. either in the original picture-writing improved, or in the mixed character, which, according to the third of these consequences, denoted in some imperfect gross way the words of the new language. And some of the difficulties of the book of Genesis may be owing to its consisting of patriarchal records of one of these kinds, translated by Moses into the Hebrew of his own times, and then written alphabetically.

I do not think it necessary to have recourse to any such hypothesis as this, in order to vindicate the truth and authority of the book of Genesis. The length of life, even after the flood, to the time of Moses, appears sufficient for the preservation of such important traditional histories uncorrupted in the religious line of Shem, by natural means. Or God might interpose miraculously, as in so many other instances in patriarchal times.

If it be objected, that we have not the least intimation of writing of any kind in Genesis, I answer, that this is a difficulty. However, one cannot draw any certain conclusions from an omission. The original of writing is not likely to be one of the first things which would be committed to writing. And if it was used only for the conveyance of important facts to the succeeding generations, we have no reason to expect the incidental mention of it. It was probably so tedious and difficult a thing to express themselves accurately in it, and verbal messages and contracts so easy and natural in those simple ages, when the veracity of the messenger or contractor was not suspected, as that writing was never used after the confusion of tongues, when language became copious, unless in affairs of great consequence.

Picture-writing is alluded to in the second commandment, and must have been in use for some time before, since a system of idolatry had been founded upon it. And this may incline one to think, that it had been chiefly employed in sacred affairs, and therefore perhaps communicated originally to Adam by God. However, if we suppose, that it did not take place till after the flood, this will not totally vitiate the foregoing conjectures. The main purport of them may stand with due alterations and allowances. But it would be tedious to state all the varieties in things of so uncertain a nature.

I come now to the art of alphabetical writing. This I conjecture to have been communicated miraculously by God to Moses at Sinai, for the following reasons, which, however, I do not judge to be decisive ones.

First, then, God is said to have written with his own finger upon the tables of stone. And I think it would be harsh to suppose this done in conformity to, and, as one may say, imitation of, any mere imperfect human invention.

Secondly, The Israelites are the only people in the whole world that have preserved any regular account of their own original. This is easily accounted for upon supposition, that alphabetical writing was first given to them in perfection; and afterwards, suppose in the time of Eli, borrowed by other nations, and accommodated in an imperfect manner to their languages. But if we suppose any other nation, the Egyptians or Arabians for instance, to have invented writing before the time of Moses, it will be somewhat difficult to assign a reason why other persons should not have borrowed this invention as well as Moses, and, like him, have given some account of their own nation, and their

ancestors; and more difficult to assign a reason why the people, who invented alphabetical writing, should not do this.

As to the Egyptians in particular, their continuing to use hieroglyphical writing, and excelling in it, shews, that they could not have invented alphabetical; for this, if we suppose it invented so early as before the time of Moses, would have abolished that, just as the use of the ten cyphers has all the other imperfect methods of notation of numbers. Nor does it seem very likely, that hieroglyphical writing should lead to alphabetical, but rather from it, since hieroglyphical characters are the immediate representatives of objects and ideas, and the mediate representatives not of letters, or simple articulate sounds, but of words, and even of clusters of words. It seems probable also, that the Egyptians would even be backward in receiving alphabetical writing from the Israelites at the time that the Philistines or Phœnicians did; as being then greatly advanced in the use of their own hieroglyphical writing, and prejudiced in its favour. And thus we may solve that very difficult question, why the Egyptians, who seem to have erected a kingdom early (however, I judge Nimrod's to have been the first by the manner in which Moses has mentioned it), and to have brought it to considerable perfection before Joseph's time, and to very great perfection afterwards, chiefly by his means, should yet have left no history of their affairs, nor even of the great empire under Sesac or Sesostris, and his successors. For they had no public calamities sufficient in any measure to destroy all their records, till the time of Cambyses; and the desolation under him being less in degree, shorter in duration, in a kingdom of greater extent, and two generations later in time than that of the Jewish state under Nebuchadnezzar, which yet did not destroy the Jewish records, could not have totally destroyed the Egyptian records, had they been more early, and superior to the Jews, in the use of alphabetical writing. Even the Greeks, who had no alphabetical writing till six hundred years after the time of Moses, have given a better account of their affairs, than the Egyptians. It ought, however, to be remarked in this place, that if we suppose the Jewish history to have been recorded by the divine appointment and direction, which is highly probable, this will lessen the force of the present argument, but not quite destroy it.

Thirdly, The late reception of writing amongst the Greeks, is both an argument, that it did not exist in any other neighbouring nation before the time of Moses, and also is consistent with its being miraculously communicated to him, to be made use of for sacred purposes, and for the preservation of the history of the world, and true religion, amongst God's peculiar people the Israelites. I here suppose, that the art of writing was not known to the Greeks, till the time of Cadmus; and that he came into Greece, agreeable to Sir Isaac Newton's opinion, about the middle of David's reign. And indeed, unless the principal points

of his chronology be admitted, it does not appear to me, that any rationale can be given of ancient times, the inventions that rose up in them, the establishment and duration of kingdoms, their mutual intercourses, &c.

For, first, If alphabetical writing was known upon the continent of Asia and Africa six hundred years before Cadmus, how could it be kept from the Greeks till his arrival amongst them, and then accommodated to the Greek tongue only very imperfectly? For the Greeks received but sixteen letters from him. The Greek tongue came itself perhaps from Egypt, in some measure; and they who brought the language two generations before Cadmus, would have brought an exact method of writing it alphabetically, had they been possessed of any such. For it is not probable, that Inachus, and the colonies of Egyptians that came with him, and after him, should change their language entirely for that of the poor wandering Cimmerians, whom they found in Greece, since we see in fact, that the colonies of Europeans do sometimes teach the barbarous natives, where they go, an European language; but never change it for theirs.

Secondly, If alphabetical writing was given to Moses miraculously, it is easy to be conceived, that it should not arrive at Greece sooner than the time of Cadmus. For the Jews were a separate people, their priests kept the writings of Moses in the ark, *i. e.* the only alphabetical writings in the world; and must be some time before they could be ready and expert either in reading or writing; in their attempts to copy, it is probable they would make some mistakes so as to fall short of the purity and perfection of the art, as communicated by God; the neighbouring nations feared and hated the Israelites, their religion, and their God; they had probably a picture-writing, or perhaps some imperfect method of denoting words, agreeably to what has been remarked above, which answered all purposes that seemed necessary to them; and thus the art of alphabetical writing might not transpire to any of the neighbouring nations till the time of Eli, when the ark, with the writings of Moses in it, was taken by the Philistines. For since the writings of Moses were not in the ark, when it was put in the temple by Solomon, it may be, that the Philistines kept them, and learnt from them the art of writing alphabetically, being now sufficiently prepared for it by such notions concerning it, as had transpired to them previously in their former intercourses with the Israelites. And thus the Phœnicians, or Philistines, will have appeared the inventors of letters to the Greeks; and Cadmus may well be supposed to have been able to accommodate the Phœnician method of writing, in an imperfect manner, to the Greek language, about two generations after the taking of the ark. Thus also, when Samuel put the writings of Moses together, as they had been copied by the priests, or others, in the order in which they now stand in the Pentateuch, there would be some devi-

ations from the original method of writing communicated to Moses by God; and these, with such as happened in after-times, particularly upon the return from the Babylonish captivity (when it is supposed by some, that even the original letters were changed), may have made the ancient method of writing the Hebrew, as the Jews practise it in their bibles for the synagogues without points, so imperfect as not to appear to be of divine original. For the same reasons, the corruptions of the Hebrew language, or the language given to Heber or Peleg, at the confusion of tongues, before Moses's time, may incline us to think the Hebrew of the Pentateuch not sufficiently regular for a divine communication. Much is also to be ascribed to our own ignorance in both these cases. However, there is a wonderful simplicity and uniformity still left, both in the Biblical Hebrew, and in the manner of writing it without points; so great, as to appear to me superior to the invention of rude ancient times.

Fourthly, The order of the Greek and Latin alphabets, by being taken from that of the Hebrew, as we have it in the alphabetical Psalms, bears testimony to the great antiquity of the Hebrew alphabet. It is to be observed here, that both the Greek and Latin alphabets coincide with the Hebrew alphabet, as much as with each other, or more; and that there is no other ancient alphabet remaining to be a competitor to the Hebrew.

Fifthly, The resolution of the complex articulate sounds of ancient languages into simple elements or letters, and then recomposing these complex sounds in writing them down alphabetically, seems to me, as observed above, too difficult a problem for ancient times; especially as they neither could see the use of it, nor conceive the practicability. It would have appeared to them a task of an infinite extent; they would never conceive, that so small a number of elements would be sufficient, even supposing they could first hit upon the design. It confirms this, that no barbarous nation has ever invented alphabetical writing for themselves. They continue ignorant of it till taught. However, let it be observed, on the other hand, that as the ancient languages were simple and narrow, the difficulty of analysing their complex sounds would be the less upon that account.

Sixthly, Since the method of making and erecting the tabernacle was communicated by God to Moses, Bezaleel, and Aholiab, in a supernatural manner, we may more easily suppose the art of writing alphabetically to be a divine gift. But then it is some objection to this, that Moses has not mentioned it as a divine gift, at least not expressly.

Seventhly, The time of Moses appears to be a suitable one for such a gift, as human life was then, perhaps, just brought down to the present degree of shortness. Till Moses's time, the length of life had preserved the sacred traditions uncorrupted, either

with or without the helps above-mentioned, at least in the line of Abraham; but then tradition began to be mixed with fables, and to lead to idolatry.

Eighthly, Alphabetical writing, by being introduced among the Israelites in the wilderness, would abolish hieroglyphical, and consequently cut off one source of idolatry. It would likewise make them superior to the Egyptians, their enemies, in the art of writing; who, perhaps, prided themselves much upon account of their perfection in hieroglyphical writing, as they might also in their river, the wisdom of their policy, the comparative greatness of their kingdom, their magical arts, religious ceremonies, &c. For this would tend to the glory of the God of the Israelites, and the establishment of the true religion amongst them.

It may be objected here, that alphabetical writing was in use before the giving of the law at Sinai, since Moses was directed before this to write an account of the battle with Amalek in a book; also to write the names of the children of Israel upon the high-priest's breast-plate, like the engravings of a signet. I answer, that both these may refer to a picture-writing, or to some improvement of it, whereby entire words were denoted, without being resolved into their simple sounds. The first might also be a prophetic intimation to Moses, however not understood by him when it was given, that he should be soon enabled to write in a much more complete manner than he, or his enemies the Egyptians, could at present.

The Edomites seem also to have had some kind of writing early, from the account which we have of their dukes in Genesis. But this might be only picture or verbal writing, explained to Samuel by some Edomite, at the time when he put together the writings of Moses: or they might learn writing from the Israelites, sooner than any other nation, as being nearly related in blood, and contiguous to them in situation.

The simplicity and uniformity of the Arabic tongue would also incline one to think, that the inhabitants of Arabia had alphabetical writing early, this having a great tendency to preserve a fixed standard in a language. But the Ishmaelites, or Midianites, who were nearly related to the Israelites, or the Kenites, who lived amongst them, might learn it from them, perhaps even during their abode in the wilderness. We may observe also, that the Arabic tongue was not only fixed, but perhaps rendered more regular, soon after the time of Mahomet, by means of the Alcoran, and of the grammars that were made for this language some time afterwards; and that before Mahomet's time, the Arabians had little communication with their neighbours, and therefore would preserve their language more pure and simple.

The changes which have happened to languages, and to the methods of writing them, since the invention of letters, and which are treated of with great copiousness in the writings of

grammarians and critics, afford innumerable attestations to the doctrine of association, and may, conversely, be much illustrated by it. But the full detail of this must be left to those who are well skilled in the several ancient and modern languages.

PROP. LXXXIV.—*To explain the general Nature of a Philosophical Language, and hint some Methods in which it might be constructed upon the foregoing Principles.*

IF we suppose mankind possessed of such a language, as that they could at pleasure denote all their conceptions adequately, *i. e.* without any deficiency, superfluity, or equivocation; if, moreover, this language depended upon a few principles assumed, not arbitrarily, but because they were the shortest and best possible, and grew on from the same principles indefinitely, so as to correspond to every advancement in the knowledge of things, this language might be termed a philosophical one, and would as much exceed any of the present languages, as a paradisiacal state does the mixture of happiness and misery, which has been our portion ever since the fall. And it is no improbable supposition, that the language given by God to Adam and Eve, before the fall, was of this kind; and though it might be narrow, answered all their exigencies perfectly well.

Now there are several methods, in which it does not seem impossible for mankind in future ages to accomplish so great a design.

Thus, first, They may examine all the possible simple articulations of which their organs are capable, with all the combinations, or complex articulate sounds, that result from them, and the relations which these bear one to another, and assign to each respectively such simple and complex ideas, and such variations of the last, as a deep insight into the nature of things, objects, ideas, the powers of the human mind, &c. shall demand by a natural claim, so as to make every expression the shortest and best possible. And though this, in our present state of ignorance, cannot but seem an impracticable project, yet the same ignorance should teach us, that we can form no notions at all of the great increase of knowledge, which may come in future ages, and which seems promised to come in the latter happy times predicted by the prophecies. However, the great, and to former times inconceivable, advancement of knowledge, which has been made in the two last centuries, may help a little to qualify our prejudices.

Secondly, If all the simple articulate sounds, with all the radical words, which are found in the present languages, were appropriated to objects and ideas agreeably to the present senses of words, and their fitness to represent objects and ideas, so as to make all consistent with itself; if, farther, the best rules of etymology and syntax were selected from the present languages, and applied to the radical words here spoken of, so as to render

them capable of expressing all the variations in objects and ideas, as far as possible, *i. e.* so as to grow proportionably to the growth of knowledge, this might also be termed a philosophical language; and, though more imperfect and narrow than the last, yet seems more possible to be brought to execution and practice.

Thirdly, If such simple articulations as are now wanting in the Hebrew alphabet were added to it, and its radical words, composed of all the combinations of twos and threes completed, proper simple senses being assigned to them, from other languages suppose, and particularly from the Arabic, Chaldee, Syriac, and Samaritan, as in Castellus's lexicon, and other books of a like kind; if, farther, such new rules of etymology and syntax were added to those which take place at present in the Biblical Hebrew, as this increase of the radicals, and application of the language to the whole aggregate of objects and ideas requires; we should have a much more simple, precise, and extensive language, than any now in being. It would also be easy to be understood by the Jews in all quarters of the world. For most of them have some knowledge of the Biblical Hebrew, and many understand the Rabbinical; which seems to be formed upon a plan not very unlike that here proposed, though without any express design; and to which, therefore, a due regard ought to be had by any one, who should attempt to execute this plan. Many eastern nations, and the Mahometans every where, would also be expert in learning this language, from the relation and resemblance which it would bear to languages already known by them; and it would be easier to be learnt by perfect novices than any other, on account of its greater simplicity and regularity. A dictionary might be made for it in itself; the Biblical Hebrew, where its sense is determinate and known, being the basis, or thing given.

In the mean time, where the writer endeavours to express himself with plainness, sincerity, and precision, being first duly qualified by the knowledge of his subject, and the reader pays a due regard to him, as his teacher, for the then present time, by using sufficient industry and candour, the ill effects of the confusion of tongues become evanescent in respect of them. But it would be happy to take away all occasion of mistake from the bulk of mankind, and to give them an opportunity of learning important truths with more ease and certainty, and in a shorter time, than they can at present.

It may not be amiss to add here, that Mr. Byrom's method of short-hand affords an accurate and elegant instance of the possibility of proceeding in such matters upon simple and philosophical principles; his short-hand being a real and adequate representation of the sounds of the English tongue, as far as is necessary for determining the sense, and that in the shortest manner possible. If we were possessed of a philosophical language, it ought to be denoted by this character, *mutatis mutandis*.

PROP. LXXXV.—*To illustrate and confirm the general Doctrine of Association by the particular Associations that take place in respect of Language.*

THIS has been done, in great measure, already, in the corollaries to the twelfth proposition. I will here insert some observations of a like kind, which would have interrupted the reader too much in that place, but may properly follow the account of language given in this section.

Let *a, b, c, d, &c.* the several letters of an alphabet, supposed to be sufficiently extensive for the purpose, represent respectively the several simple sensible pleasures and pains, to which a child becomes subject upon its first entrance into the world. Then will the various combinations of these letters represent the various combinations of pleasures and pains, formed by the events and incidents of human life; and, if we suppose them to be also the words of a language, this language will be an emblem or adumbration of our passage through the present life; the several particulars in this being represented by analogous ones in that.

Thus the reiterated impressions of the simple sensible pleasures and pains made upon the child, so as to leave their miniatures, or ideas, are denoted by his learning the alphabet; and his various associations of these ideas, and of the pleasures and pains themselves, by his putting letters and syllables together, in order to make words: and when association has so far cemented the component parts of any aggregate of ideas, pleasures and pains, together, as that they appear one indivisible idea, pleasure or pain, the child must be supposed by an analogous association to have learnt to read without spelling.

As the child's words become more and more polysyllabic by composition and decomposition, till at length whole clusters run together into phrases and sentences, all whose parts occur at once, as it were, to the memory, so his pleasures and pains become more and more complex by the combining of combinations; and in many cases numerous combinations concur to form one apparently simple pleasure.

The several relations of words, as derived from the same root, as having the same prepositions and terminations, &c. represent corresponding relations in the compound ideas, pleasures, and pains.

When the complex pleasures and pains, formed from miniatures of the sensible ones, become the means of gaining other and greater pleasures, *viz.* by fading from frequent repetition, and so becoming mere ideas, or by any other method, we must suppose, that our present knowledge in language is used as a means of attaining farther knowledge in it.

As the sight and sound of words, impressed upon us on common occasions, do not at all suggest the original of these words from simple letters, this being a light in which grammarians and

linguists alone consider words; so the complex pleasures and pains may pass over men's minds, and be felt daily, and yet not be considered by them as mere combinations, unless they be peculiarly attentive and inquisitive in this respect.

This comparison may serve as a method of assisting the reader's conceptions, in respect of the manner in which combinations of miniatures are formed. It is also a considerable evidence in favour of the general doctrine of association, since language is not only a type of these associated combinations, but one part of the thing typified. Was human life perfect, our happiness in it would be properly represented by that accurate knowledge of things, which a truly philosophical language would give us. And if we suppose a number of persons thus making a progress in pure unmixed happiness, and capable both of expressing their own feelings, and of understanding those of others, by means of a perfect and adequate language, they might be like new senses and powers of perception to each other, and both give to and receive from each other happiness indefinitely. But as human life is, in fact, a mixture of happiness and misery, so all our languages must, from the difference of our associations, convey falsehood as well as truth, as above noted. And yet, since our imperfect languages improve, purify, and correct themselves perpetually by themselves, and by other means, so that we may hope at last to obtain a language, which shall be an adequate representation of ideas and a pure channel of conveyance for truth alone, analogy seems to suggest, that the mixture of pleasures and pains, which we now experience, will gradually tend to a collection of pure pleasures only, and that association may be the means of effecting this, as remarked in the ninth corollary of the fourteenth proposition.

SCHOLIUM.

Musical sounds afford, like articulate ones, various instances of the power of association. It ought to be remarked here also, that the concords formed from the twelve semi-tones in the octave, are more in number than the discords; and that the harshness of these last passes by degrees into the limits of pleasure, partly from frequent repetition, partly from their associations with concords.

The doctrine of association may likewise be illustrated by that of colours. Thus, let the seven primary colours, with their shades, represent the original sensible pleasures; then will the various associated pleasures of human life, supposing that we enjoyed a state of unmixed happiness, be represented by the compound vivid colours, which natural bodies, of regular makes, and strong powers of reflection, exhibit to the eye. White, which is compounded of all the colours reflected copiously, and which yet, as far as the eye can discern, bears no resemblance to

any of them, would represent a state of great mental happiness, ultimately deduced from all the sensible pleasures, and in which, notwithstanding, the person himself distinguishes no traces of any of these. And, agreeably to this, light, brightness, and whiteness, are often put for perfection, purity, and happiness, as obscurity, blackness, and darkness, are for imperfection and misery. Besides white, there are other compound colours, which bear little or no resemblance to any of the primary ones, as well as many in which some primary colour is evidently predominant. These represent the several kinds and degrees of inferior compound pleasures, some of which are, according to common estimation, quite foreign to the senses, whilst others are manifestly tinged with pleasant sensations, and their miniatures.

If the moderate agitations which light causes in bodies, when it is by them reflected back upon, or transmitted to, other bodies, be supposed to correspond to pleasant vibrations in the nervous system, and the greater agitations, which it excites in those that absorb it, to the violent vibrations in which pain consists; then the colours of natural bodies, some of which incline to light, and some to darkness, and that with all the possible varieties and mixtures of the primary colours, may be considered as the language by which they express that mixture of pleasures and pains in human life, to which their agitations are supposed to correspond. And here again we may observe, that though there are some natural bodies, which absorb and stifle within themselves almost all the light which they receive, and which accordingly are dark, black, and unpleasant to the beholders, yet the greatest part of natural bodies either reflect lively colours, or reflect some, and transmit others, or transmit all the colours freely. And this type is also, in part, the thing typified, inasmuch as agreeable and disagreeable colours make part of the original pleasures and pains of human life.

Compound tastes may likewise illustrate association, as above noted under the 12th proposition: for where the number of ingredients is very great, as in Venice treacle, no one can be tasted distinctly; whence the compound appears to bear no relation to its component parts. It is to be observed farther, that ingredients which are separately disagreeable, often enter compounds, whose tastes are highly agreeable. Now in these cases either the opposite tastes must coalesce into one, which pleases from the prepollence of agreeable tastes upon the whole, as soon as the association is cemented sufficiently, or else the disagreeable tastes must, by frequent repetition, fall within the limits of pleasure at last; which seems rather to be the truth.

The similarity of the three instances of this scholium arises from the analogy of our senses to each other, and to our frame in general; which is the sum total of all our senses. And, conversely, they confirm this analogy.

SECT. II.

OF PROPOSITIONS, AND THE NATURE OF ASSENT.

PROP. LXXXVI.—*To explain the Nature of Assent and Dissent, and to shew from what Causes they arise.*

IT appears, from the whole tenor of the last Section, that assent and dissent, whatever their precise and particular nature may be, must come under the notion of ideas, being only those very complex internal feelings, which adhere by association to such clusters of words as are called *propositions* in general, or affirmations and negations in particular. The same thing is remarked in the 10th corollary to the 12th proposition.

But in order to penetrate farther into this difficult and important point, I will distinguish assent (and by consequence its opposite, dissent) into two kinds, rational and practical; and define each of these.

Rational assent then to any proposition, may be defined, a readiness to affirm it to be true, proceeding from a close association of the ideas suggested by the proposition, with the idea, or internal feeling, belonging to the word truth; or of the terms of the proposition with the word truth. Rational dissent is the opposite to this. This assent might be called verbal; but as every person supposes himself always to have sufficient reason for such readiness to affirm or deny, I rather choose to call it rational.

Practical assent is a readiness to act in such manner as the frequent vivid recurrency of the rational assent disposes us to act; and practical dissent the contrary.

Practical assent is therefore the natural and necessary consequence of rational, when sufficiently impressed. There are, however, two cautions to be subjoined here, *viz.* first, that some propositions, mathematical ones for instance, admit only of a rational assent, the practical not being applied to them in common cases. Secondly, that the practical assent is sometimes generated, and arrives at a high degree of strength, without any previous rational assent, and by methods that have little or no connexion with it. Yet still it is in general much influenced by it, and, conversely, exerts a great influence upon it. All this will appear more clearly when we come to the instances.

Let us next inquire into the causes of rational and practical assent, beginning with that given to mathematical conclusions.

Now the cause that a person affirms the truth of the proposition *twice two is four*, is the entire coincidence of the visible or tangible idea of twice two with that of four, as impressed upon the mind by various objects. We see every where, that twice

two and four are only different names for the same impression. And it is mere association which appropriates the word truth, its definition, or its internal feeling, to this coincidence.

Where the numbers are so large, that we are not able to form any distinct visible ideas of them, as when we say that 12 times 12 is equal to 144; a coincidence of the words arising from some method of reckoning up 12 times 12, so as to conclude with 144, and resembling the coincidence of words which attends the just-mentioned coincidence of ideas in the simpler numerical propositions, is the foundation of our rational assent. For we often do, and might always, verify the simplest numerical propositions, by reckoning up the numbers. The operations of addition, subtraction, multiplication, division, and extraction of roots, with all the most complex ones relating to algebraic quantities, considered as the exponents of numbers, are no more than methods of producing this coincidence of words, founded upon and rising above one another. And it is mere association again, which appropriates the word truth to the coincidence of the words, or symbols, that denote the numbers.

It is to be remarked, however, that this coincidence of words is by those who look deeper into things, supposed to be a certain argument, that the visible ideas of the numbers under consideration, as of 12 times 12, and 144, would coincide as much as the visible ideas of twice two and four, were they as clear and distinct. And thus the real and absolute truth is said by such persons to be as great in complex numerical propositions, as in the simplest. All this agrees with what Mr. Locke has observed concerning numbers, *viz.* that their names are necessary in order to our obtaining distinct ideas of them; for by distinct ideas he must be understood to mean proper methods of distinguishing them from one another, so as to reason justly upon them. He cannot mean distinct visible ideas.

In geometry there is a like coincidence of lines, angles, spaces, and solid contents, in order to prove them equal in simple cases. Afterwards in complex cases, we substitute the terms whereby equal things are denoted for each other, also the coincidence of the terms, for that of the visible ideas, except in the new step advanced in the proposition; and thus get a new equality, denoted by a new coincidence of terms. This resembles the addition of unity to any number, in order to make the next, as of 1 to 20, in order to make 21. We have no distinct visible idea, either of 20 or 21; but we have of the difference between them, by fancying to ourselves a confused heap of things supposed or called 20 in number; and then farther fancying 1 to be added to it. By a like process in geometry we arrive at the demonstration of the most complex propositions.

The properties of numbers are applied to geometry in many cases, as when we demonstrate a line or space to be half or double of any other, or in any other rational proportion to it.

And as in arithmetic words stand for indistinct ideas, in order to help us to reason upon them as accurately as if they were distinct; also cyphers for words, and letters for cyphers, both for the same purpose; so letters are put for geometrical quantities also, and the agreements of the first for those of the last. And thus we see the foundation upon which the whole doctrine of quantity is built; for all quantity is expounded either by number or extension, and their common and sole exponent is algebra. The coincidence of ideas is the foundation of the rational assent in simple cases; and that of ideas and terms together, or of terms alone, in complex ones. This is upon supposition that the quantities under consideration are to be proved equal. But if they are to be proved unequal, the want of coincidence answers the same purpose. If they are in any numeral ratio, this is only the introduction of a new coincidence. Thus, if, instead of proving A to be equal to B , we are to prove it equal to half B , the two parts of B must coincide with each other, either in idea or terms, and A with one.

And thus it appears, that the use of words is necessary for geometrical and algebraical reasonings, as well as for arithmetical.

We may see also that association prevails in every part of the processes hitherto described.

But these are not the only causes of giving rational assent to mathematical propositions, as this is defined above. The memory of having once examined and assented to each step of a demonstration, the authority of an approved writer, &c. are sufficient to gain our assent, though we understand no more than the import of the proposition; nay, even though we do not proceed so far as this. Now this is mere association again; this memory, authority, &c. being, in innumerable instances, associated with the before-mentioned coincidence of ideas and terms.

But here a new circumstance arises. For memory and authority are sometimes found to mislead; and this opposite coincidence of terms puts the mind into a state of doubt, so that sometimes truth may recur, and unite itself with the proposition under consideration, sometimes falsehood, according as the memory, authority, &c. in all their peculiar circumstances, have been associated with truth or falsehood. However, the foundation of assent is still the same. I here describe the fact only. And yet, since this fact must always follow from the fixed immutable laws of our frame, the obligation to assent (whatever be meant by this phrase) must coincide with the fact.

And thus a mathematical proposition, with the rational assent or dissent arising in the mind, as soon as it is presented to it, is nothing more than a group of ideas, united by association, *i. e.* than a very complex idea, as was affirmed above of propositions in general. And this idea is not merely the sum of the ideas belonging to the terms of the proposition, but also includes the ideas, or internal feelings, whatever they be, which belong to

equality, coincidence, truth, and in some cases, those of utility, importance, &c.

For mathematical propositions are, in some cases, attended with a practical assent, in the proper sense of these words; as when a person takes this or that method of executing a projected design, in consequence of some mathematical proposition assented to from his own examination, or on the authority of others. Now, that which produces the train of voluntary actions, here denoting the practical assent, is the frequent recurrency of ideas of utility and importance. These operate according to the method laid down in the 20th proposition, *i. e.* by association; and though the rational assent be a previous requisite, yet the degree of the practical assent is proportional to the vividness of these ideas; and in most cases they strengthen the rational assent by a reflex operation.

Propositions concerning natural bodies are of two kinds, vulgar and scientific. Of the first kind are, *that milk is white, gold yellow, that a dog barks, &c.* These are evidently nothing but forming the present complex idea belonging to material objects into a proposition, or adding some of its common associates, so as to make it more complex. There is scarce room for dissent in such propositions, they being all taken from common appearances. Or, if any doubt should arise, the matter must be considered scientifically. The assent given to these propositions arises from the associations of the terms, as well as of the ideas denoted by them.

In scientific propositions concerning natural bodies, a definition is made, as of gold from its properties, suppose its colour, and specific gravity, and another property or power joined to them, as a constant or common associate. Thus gold is said to be ductile, fixed, or soluble in *aqua regia*. Now to persons who have made the proper experiments a sufficient number of times, these words suggest the ideas which occur in those experiments, and, conversely, are suggested by them, in the same manner as the vulgar propositions above-mentioned suggest and are suggested by common appearances. But then, if they be scientific persons, their readiness to affirm that gold is soluble in *aqua regia* universally, arises also from the experiments of others, and from their own and others' observations on the constancy and tenor of nature. They know, that the colour, and specific gravity, or almost any two or three remarkable qualities of any natural body, infer the rest, being never found without them. This is a general truth; and as these general terms are observed to coincide, in fact, in a great variety of instances, so they coincide at once in the imagination, when applied to gold, or any other natural body, in particular. The coincidence of general terms is also observed to infer that of the particular cases in many instances, besides those of natural bodies; and this unites the subject and predicate of the proposition, *gold is*

soluble in aqua regia, farther in those who penetrate still deeper into abstract speculations. And hence we may see, as before, First, That terms or words are absolutely necessary to the art of reasoning: Secondly, That our assent is here also, in every step of the process, deducible from association.

The propositions formed concerning natural bodies are often attended with a high degree of practical assent, arising chiefly from some supposed utility and importance, and which is no ways proportionable to the foregoing, or other such like allowed causes of rational assent. And in some cases the practical assent takes place before the rational. But then, after some time the rational assent is generated and cemented most firmly by the prevalence of the practical. This process is particularly observable in the regards paid to medicines, *i. e.* in the rational and practical assent to the propositions concerning their virtues.

It is to be observed, that children, novices, unlearned persons, &c. give, in many cases, a practical assent upon a single instance; and that this arises from the first and simplest of the associations here considered. The influence of the practical assent over the rational arises plainly from their being joined together in so many cases. The vividness of the ideas arising from the supposed utility, importance, &c. does also unite the subject and predicate sooner and closer, agreeably to what has been observed in the general account of association.

The evidences for past facts are a man's own memory, and the authority of others. These are the usual associates of true past facts, under proper restrictions, and therefore beget the readiness to affirm a past fact to be true, *i. e.* the rational assent. The integrity and knowledge of the witnesses, being the principal restriction, or requisite, in the accounts of past facts, become principal associates to the assent to them; and the contrary qualities to dissent.

If it be asked, how a narration of an event supposed to be certainly true, supposed doubtful, or supposed entirely fictitious, differs in its effect upon the mind, in the three circumstances here alleged, the words being the same in each, I answer, first, in having the terms *true*, *doubtful*, and *fictitious*, with a variety of usual associates to these, and the corresponding internal feelings of respect, anxiety, dislike, &c. connected with them respectively; whence the whole effects, exerted by each upon the mind, will differ considerably from one another. Secondly, If the event be of an interesting nature, as a great advantage accruing, the death of a near friend, the affecting related ideas will recur oftener, and by so recurring agitate the mind more, in proportion to the supposed truth of the event. And it confirms this, that the frequent recurrency of an interesting event, supposed doubtful, or even fictitious, does, by degrees, make it appear like a real one, as in reveries, reading romances, seeing plays, &c. This affection of mind may be called the practical assent to past facts;

and it frequently draws after it the rational, as in the other instances above alleged.

The evidence for future facts is of the same kind with that for the propositions concerning natural bodies, being like it, taken from induction and analogy. This is the cause of the rational assent. The practical depends upon the recurrency of the ideas, and the degree of agitation produced by them in the mind. Hence reflection makes the practical assent grow for a long time after the rational is arisen to its height; or if the practical arise without the rational, in any considerable degree, which is often the case, it will generate the rational. Thus the sanguine are apt to believe and assert what they hope, and the timorous what they fear.

There are many speculative abstracted propositions in logic, metaphysics, ethics, controversial divinity, &c. the evidence for which is the coincidence or analogy of the abstract terms, in certain particular applications of them, or as considered in their grammatical relations. This causes the rational assent. As to the practical assent or dissent, it arises from the ideas of importance, reverence, piety, duty, ambition, jealousy, envy, self-interest, &c. which intermix themselves in these subjects, and, by doing so, in some cases add great strength to the rational assent; in others destroy it, and convert it into its opposite.

And thus it appears, that rational assent has different causes in propositions of different kinds, and practical likewise; that the causes of rational are also different from those of practical; that there is, however, a great affinity, and general resemblance, in all the causes; that rational and practical assent exert a perpetual reciprocal effect upon one another; and consequently, that the ideas belonging to assent and dissent, and their equivalents and relatives, are highly complex ones, unless in the cases of very simple propositions, such as mathematical ones. For besides the coincidence of ideas and terms, they include, in other cases, ideas of utility, importance, respect, disrespect, ridicule, religious affections, hope, fear, &c. and bear some gross general proportion to the vividness of these ideas.

COR. I. When a person says, *video meliora proboque, deteriora sequor*; it shews that the rational and practical assent are at variance, that they have opposite causes, and that neither of these has yet destroyed the other.

COR. II. The rational and practical faith in religious matters are excellent means of begetting each other.

COR. III. Vicious men, *i. e.* all persons who want practical faith, must be prejudiced against the historical and other rational evidences in favour of revealed religion.

COR. IV. It is impossible any person should be so sceptical, as not to have the complex ideas denoted by assent and dissent associated with a great variety of propositions, in the same manner, as in other persons; just as he must have the same

ideas in general affixed to the words of his native language, as other men have. A pretended sceptic is therefore no more than a person who varies from the common usage in his application of a certain set of words, *viz.* truth, certainty, assent, dissent, &c.

COR. V. As there is a foundation for unity amongst mankind in the use and application of words, so there is for an unity in the assent, or complex ideas belonging to propositions; and a philosophical language, or any other method of bringing about the first unity, would much conduce to this. A careful examination of things, of the world natural, the human mind, the Scriptures, would conduce much also. But candour, simplicity, and an humble sense of our own ignorance, which may be called a religious or christian scepticism, is the principal requisite, and that without which this part of the confusion at Babel can never be remedied. When religion has equally and fully absorbed different persons, so that God is, in respect of them, all in all, as far as the present condition of mortality will permit, their practical assent must be the same; and therefore their rational cannot differ long or widely.

The ideas and internal feelings which arise in the mind, from words and propositions, may be compared to, and illustrated by, those which the appearances of different persons excite. Suppose two persons, *A* and *B*, to go together into a crowd, and there each of them to see a variety of persons whom he knew in different degrees, as well as many utter strangers. *A* would not have the same ideas and associations raised in him from viewing the several faces, dresses, &c. of the persons in the crowd, as *B*, partly from his having a different knowledge of, and acquaintance with them, partly from different predispositions to approve and disapprove. But let *A* and *B* become equally acquainted with them, and acquire, by education and association, the same predispositions of mind, and then they will at last make the same judgment of each of the persons whom they see.

COR. VI. Religious controversies concerning abstract propositions arise generally from the different degrees of respect paid to terms and phrases, which conduce little or nothing to the generation of practical faith, or of love to God, and trust in Him through Christ.

PROP. LXXXVII.—*To deduce Rules for the Ascertainment of Truth, and Advancement of Knowledge, from the Mathematical Methods of considering Quantity.*

THIS is done in the doctrine of chances, with respect to the events there considered. And though we seldom have such precise *data*, in mixed sciences, as are there assumed, yet there are two remarks, of very general use and application, deducible from the doctrine of chances.

Thus, first, If the evidences brought for any proposition,

fact, &c. be dependent on each other, so that the first is required to support the second, the second to support the third, &c. *i. e.* if a failure of any one of the evidences renders all the rest of no value, the separate probability of each evidence must be very great, in order to make the proposition credible; and this holds so much the more, as the dependent evidences are more numerous. For instance, if the value of each evidence be $\frac{1}{a}$, and the number of evidences be in n , then will the resulting probability be $\frac{1}{a^n}$. I here suppose absolute certainty to be denoted by 1; and consequently, that a can never be less than 1. Now it is evident, that $\frac{1}{a^n}$ decreases with every increase both of a and n .

Secondly, If the evidences brought for any proposition, fact, &c. be independent on each other, *i. e.* if they be not necessary to support each other, but concur, and can, each of them, when established upon its own proper evidences, be applied directly to establish the proposition, fact, &c. in question, the deficiency in the probability of each must be very great, in order to render the proposition perceptibly doubtful; and this holds so much the more, as the evidences are more numerous. For instance, if the evidences be all equal, and the common deficiency in each be $\frac{1}{a}$, if also the number of evidences be n as before, the deficiency of the resulting probability will be no more than $\frac{1}{a^n}$, which is practically nothing, where a and n are considerable. Thus if a and n be each equal to 10, $\frac{1}{a^n}$ will be $\frac{1}{10,000,000,000}$, or only one in ten thousand millions; a deficiency from certainty, which is utterly imperceptible to the human mind.

It is indeed evident, without having recourse to the doctrine of chances, that the dependency of evidences makes the resulting probability weak, their independency strong. Thus a report passing from one original author through a variety of successive hands loses much of its credibility, and one attested by a variety of original witnesses gains, in both cases, according to the number of successive reporters, and original witnesses, though by no means proportionably thereto. This is the common judgment of mankind, verified by observation and experience. But the mathematical method of considering these things is much more precise and satisfactory, and differs from the common one, just as the judgment made of the degrees of heat by the thermometer does from that made by the hand.

We may thus also see in a shorter and simpler way that the resulting probability may be sufficiently strong in dependent evidences, and of little value in independent ones, according as

the separate probability of each evidence is greater or less. Thus the principal facts of ancient history are not less probable practically now, than ten or fifteen centuries ago, nor less so then, than in the times immediately succeeding; because the diminution of evidence in each century is imperceptible. For, if $\frac{1}{a}$ be equal to 1, $\frac{1}{a^n}$ will be equal to 1 also; and if the deficiency of $\frac{1}{a}$ from 1 be extremely small, that of $\frac{1}{a^n}$ will be extremely small also, unless n be extremely great. And for the same reason a large number of weak arguments proves little; for $\frac{1}{a}$ the deficiency of each argument, being extremely great, $\frac{1}{a^n}$, the resulting deficiency of independent evidences, will be extremely great also.

It appears likewise, that the inequality of the separate evidences does not much affect this reasoning. In like manner, if the number of evidences, dependent or independent, be great, we may make great concessions as to the separate values of each. Again, a strong evidence in dependent ones can add nothing, but must weaken a little; and, after a point is well settled by a number of independent ones, all that come afterwards are useless, because they can do no more than remove the imperceptible remaining deficiency, &c. And it will be of great use to pursue these and such like deductions, both mathematically, and by applying them to proper instances selected from the sciences, and from common life, in order to remove certain prejudices, which the use of general terms, and ways of speaking, with the various associations adhering to them, is apt to introduce and fix upon the mind. It cannot but assist us in the art of reasoning, thus to take to pieces, recompose, and ascertain our evidences.

If it be asked, upon what authority absolute certainty is represented by unity, and the several degrees of probability by fractions less than unity, in the doctrine of chances? also, upon what authority the reasoning used in that doctrine is transferred to other subjects, and made general, as here proposed? I answer, that no person who weighs these matters carefully, can avoid giving his assent; and that this precludes all objections. No sceptic would, in fact, be so absurd as to lay two to one, where the doctrine of chances determines the probability to be equal on each side; and therefore we may be sure, that he gives a practical assent at least to the doctrine of chances.

M. De Moivre has shewn, that where the causes of the happening of an event bear a fixed ratio to those of its failure, the happenings must bear nearly the same ratio to the failures, if the number of trials be sufficient; and that the last ratio approaches to the first indefinitely, as the number of trials increases. This

may be considered as an elegant method of accounting for that order and proportion, which we every where see in the phænomena of nature. The determinate shapes, sizes, and mutual actions of the constituent particles of matter, fix the ratios between the causes for the happenings, and the failures; and therefore it is highly probable, and even necessary, as one may say, that the happenings and failures should perpetually recur in the same ratio to each other nearly, while the circumstances are the same. When the circumstances are altered, then new causes take place; and consequently there must be a new, but fixed ratio, between the happenings and the failures. Let the first circumstances be called *A*, the new ones *B*. If now the supposition be made so general, as equally to take in both *A* and *B*, the ratio of the happenings and failures will not be such as either *A* or *B* required. But still it will tend to a preciseness, just as they did, since the sum of the causes of the happenings must bear a fixed ratio to the sum of the causes of the failures.

An ingenious friend has communicated to me a solution of the inverse problem, in which he has shewn what the expectation is, when an event has happened *p* times, and failed *q* times, that the original ratio of the causes for the happening or failing of an event should deviate in any given degree from that of *p* to *q*. And it appears from this solution, that where the number of trials is very great, the deviation must be inconsiderable; which shews that we may hope to determine the proportions, and, by degrees, the whole nature, of unknown causes, by a sufficient observation of their effects.

The inferences here drawn from these two problems are evident to attentive persons, in a gross general way, from common methods of reasoning.

Let us, in the next place, consider the Newtonian differential method, and compare it with that of arguing from experiments and observations, by induction and analogy. This differential method teaches, having a certain number of the ordinates of any unknown curve given with the points of the absciss on which they stand, to find out such a general law for this curve, *i. e.* such an equation expressing the relation of an ordinate and absciss in all magnitudes of the absciss, as will suit the ordinates and points of the absciss given, in the unknown curve under consideration. Now here we may suppose the given ordinates standing upon given points to be analogous to effects, or the results of various experiments in given circumstances, the absciss analogous to all possible circumstances, and the equation afforded by the differential method to that law of action, which, being supposed to take place in the given circumstances, produces the given effects. And as the use of the differential method is to find the lengths of ordinates not given, standing upon points of the absciss that are given, by means of the equation, so the use of attempts to make general conclusions by induction and

analogy, from particular effects or phænomena, in different given circumstances, by applying the general law conclusion to these circumstances.

This parallel is the more pertinent and instructive, inasmuch as the mathematical conclusion drawn by the differential method, though formed in a way that is strictly just, and so as to have the greatest possible probability in its favour, is, however, liable to the same uncertainties, both in kind and degree, as the general maxims of natural philosophy drawn from natural history, experiments, &c.

If many ordinates be given; if the distances of the points of the absciss, on which they stand, be equal and small; if the ordinate required lie amongst them, or near them; and if there be reason to think, that the curve itself is formed according to some simple, though unknown law; then may we conclude, that the new ordinate, determined by the equation, does not vary far from the truth. And if the resulting equation be simple, and always the same, from whatever given ordinates it be extracted, there is the greatest reason to think this to be the real original law or equation of the curve; and consequently that all its points and properties may be determined with perfect exactness by means of it: whereas, if the given ordinates be few, their distances great or unequal, the ordinate required considerably distant from many or most of them, the unknown curve be a line drawn at hazard, and the resulting equation different, where different ordinates are given, though their number be the same, there will be little probability of determining the new ordinate with exactness; however, still the differential method affords us the greatest probability which the *data* permit in such cases.

In like manner, if the experiments or observations be many, their circumstances nearly related to each other, and in a regular series, the circumstances of the effect to be investigated nearly related to them; also, if the real cause may be supposed to produce these effects, by the varieties of some simple law, the method of induction and analogy will carry great probability with it. And if the general conclusion or law be simple, and always the same, from whatever phænomena it be deduced, such as the three laws of nature, the doctrines of gravitation, and of the different refrangibility of light; or to go still higher, by taking a mathematical instance, the law for finding the coefficients of the integral powers of a binomial, deduced from mere trials in various powers; there can scarce remain any doubt, but that we are in possession of the true law inquired after, so as to be able to predict with certainty, in all cases where we are masters of the method of computation, or applying it; and have no reason to suspect, that other unknown laws interfere. But, if the given phænomena be few, their circumstances very different from each other, and from those of the effect to be predicted; if there be reason to suppose, that many causes concur in the producing

these phænomena, so that the law of their production must be very complex; if a new hypothesis be required to account for every new combination of these phænomena; or, at least, one that differs considerably from itself; the best hypothesis which we can form, *i. e.* the hypothesis which is most conformable to all the phænomena, will amount to no more than an uncertain conjecture; and yet still it ought to be preferred to all others, as being the best that we can form.

That instantaneous and necessary coalescence of ideas, which makes intuitive evidence, may be considered as the highest kind of induction, and as amounting to a perfect coincidence of the effect concluded with those from which it is concluded. This takes place only in mathematics. Thus we infer, that 2 and 2 make 4, only from prior instances of having actually perceived this, and from the necessary coincidence of all these instances with all other possible ones of 2 and 2. Mathematical demonstrations are made up of a number of these, as was observed above.

Where the instances from whence the induction is made are alike, as far as we know, to that under consideration, at least in all things that affect the present inquiry, it affords the highest probability, and may be termed induction, in the proper sense of the word. Thus we infer, that the bread before us is nutritive and wholesome, because its smell, taste, ingredients, manner of composition, &c. are the same as those of other bread, which has often before been experienced to be so.

But, if the instance under consideration be in some respects like the foregoing ones, in others not, this kind of proof is generally termed one taken from analogy. Thus, if we argue from the use and action of the stomach in one animal to those in another, supposed to be unknown, there will be a probable hazard of being mistaken, proportional in general to the known difference of the two animals, as well as a probable evidence for the truth of part, at least, of what is advanced, proportional to the general resemblance of the two animals. But if, upon examination, the stomach, way of feeding, &c. of the second animal should be found, to sense, the same as in the first, the analogy might be considered as an induction properly so called, at least as approaching to it; for precise limits cannot be fixed here. If the second animal be of the same species, also of the same age, sex, &c. with the first, the induction becomes perpetually of a higher and a higher order, approaching more and more to the coincidence, which obtains in mathematical evidences, and yet never being able entirely to arrive at it. But then the difference, being only an infinitesimal fraction, as it were, becomes nothing to all practical purposes whatsoever. And if a man considers farther, that it would be hard to find a demonstration, that he does not mistake the plainest truths; this lessens the difference theoretically also.

It is often in our power to obtain an analogy where we cannot have an induction; in which case reasoning from analogy ought to be admitted; however, with all that uncertainty which properly belongs to it, considered as more or less distant from induction, as built upon more or fewer dependent or independent evidences, &c. Analogy may also, in all cases, be made use of as a guide to the invention. But coincidence in mathematical matters, and induction in others, wherever they can be had, must be sought for as the only certain tests of truth. However, induction seems to be a very sufficient evidence in some mathematical points, affording at least as much evidence there as in natural philosophy; and may be safely relied on in perplexed cases, such as complex series, till satisfactory demonstrations can be had.

The analogous natures of all the things about us are a great assistance in decyphering their properties, powers, laws, &c. inasmuch as what is minute or obscure in one may be explained and illustrated by the analogous particular in another, where it is large and clear. And thus all things become comments on each other in an endless reciprocation.

When there are various arguments for the same thing taken from induction or analogy, they may all be considered as supporting one another in the same manner as independent evidences. Thus, if it could be shewed, that the human understanding is entirely dependent on association, (as is remarked in this and the last section,) the many analogies and connexions between the understanding and affections, as these terms are commonly understood and contradistinguished by writers, would make it very probable, that association presides in the same manner in the generation of the affections; and *vice versâ*. And the more analogies, and mutual connexions, between the understanding and affections, were produced, so many more independent or concurrent evidences would there be for this prevalence of association in one, admitting it in the other. But, if now it be shewn farther, that the understanding and affections are not really distinct things, but only different names, which we give to the same kind of motions in the nervous system, on account of a difference in degree, and other differences which it would be tedious here to enumerate, but which make no difference in respect of the power of association, then all the arguments from analogy are transformed into one of induction; which, however, is stronger than the united force of them all. For now it may be shewed, that association must prevail in each motion in the brain, by which affection is expounded, from a large induction of particulars, in which it prevails in the generation of ideas, or of the motions by which they are expounded, and which we suppose to be proved to be of the same kind with those that expound the affections. Thus also inductions may be taken from the smell and taste of bread, to prove it wholesome; which would both be transformed into one simple argument stronger

than both, could we see the internal constitution of the small parts of the bread, from whence its smell, and taste, and wholesomeness, are all derived. Thus, again, all the arguments of induction for the manner of extracting the square root in numbers vanish into the single demonstrative proof, as soon as this is produced. And the great business in all branches of knowledge is thus to reduce, unite, and simplify our evidences; so as that the one resulting proof, by being of a higher order, shall be more than equal in force to all the concurrent ones of the inferior orders.

Having now considered in what manner the doctrine of chances, and the Newtonian differential method, may serve to shew in general the value of dependent and independent or concurrent evidences, and the probability of general conclusions formed by induction and analogy; let us next inquire by what means we are to form these general conclusions, and discover their evidences. Now the different methods of doing this may be said to resemble respectively the rule of false in common arithmetic; the algebraic methods of bringing the unknown quantity into an equation, under a form capable of all the algebraic operations, addition, subtraction, &c.; the algebraic methods of finding the roots of equations of the higher orders by approximation; and the art of decyphering: all which four methods bear also a considerable resemblance to each other. I will consider them in order, and endeavour to shew how analogous methods may be introduced into the sciences in general to advantage.

First, then, As according to the rule of false, the arithmetician supposes a certain number to be that which is sought for; treats it as if it was that; and finding the deficiency or overplus in the conclusion, rectifies the error of his first position by a proportional addition or subtraction, and thus solves the problem; so it is useful in inquiries of all kinds to try all such suppositions as occur with any appearance of probability, to endeavour to deduce the real phænomena from them; and if they do not answer in some tolerable measure, to reject them at once; or if they do, to add, expunge, correct, and improve, till we have brought the hypothesis as near as we can to an agreement with nature. After this it must be left to be farther corrected and improved, or entirely disproved, by the light and evidence reflected upon it from the contiguous, and even, in some measure, from the remote branches of other sciences.

Were this method commonly used, we might soon expect a great advancement in the sciences. It would much abate that unreasonable fondness, which those who make few or no distinct hypotheses, have for such confused ones as occur accidentally to their imaginations, and recur afterwards by association. For the ideas, words, and reasonings, belonging to the favourite hypothesis, by recurring, and being much agitated in the brain, heat

it, unite with each other, and so coalesce in the same manner, as genuine truths do from induction and analogy. Verbal and grammatical analogies and coincidences are advanced into real ones; and the words which pass often over the ear, in the form of subject and predicate, are from the influence of other associations made to adhere together insensibly, like subjects and predicates, that have a natural connexion. It is in vain to bid an inquirer form no hypothesis. Every phænomenon will suggest something of this kind: and, if he do not take care to state such as occur fully and fairly, and adjust them one to another, he may entertain a confused inconsistent mixture of all, of fictitious and real, possible and impossible: and become so persuaded of it, as that counter-associations shall not be able to break the unnatural bond. But he that forms hypotheses from the first, and tries them by the facts, soon rejects the most unlikely ones; and, being freed from these, is better qualified for the examination of those that are probable. He will also confute his own positions so often, as to fluctuate in equilibrio, in respect of prejudices, and so be at perfect liberty to follow the strongest evidences.

In like manner, the frequent attempts to make an hypothesis that shall suit the phænomena, must improve a man in the method of doing this; and beget in him by degrees an imperfect practical art, just as algebraists and decyphers, that are much versed in practice, are possessed of innumerable subordinate artifices, besides the principal general ones, that are taught by the established rules of their arts; and these, though of the greatest use to themselves, can scarce be explained or communicated to others. These artifices may properly be referred to the head of factitious sagacity, being the result of experience, and of impressions often repeated, with small variations from the general resemblance.

Lastly, The frequent making of hypotheses, and arguing from them synthetically, according to the several variations and combinations of which they are capable, would suggest numerous phænomena, that otherwise escape notice, and lead to *experimenta crucis*, not only in respect of the hypothesis under consideration, but of many others. The variations and combinations just mentioned suggest things to the invention, which the imagination unassisted is far unequal to; just as it would be impossible for a man to write down all the changes upon eight bells, unless he had some method to direct him.

But this method of making definite hypotheses, and trying them, is far too laborious and mortifying for us to hope that inquirers will in general pursue it. It would be of great use to such as intend to pursue it, to make hypotheses for the phænomena, whose theories are well ascertained; such as those of the circulation of the blood, of the pressure of the air, of the different refrangibility of the rays of light, &c. and see how they

are gradually compelled into the right road, even from wrong suppositions fairly compared with the phænomena. This would habituate the mind to a right method, and beget the factitious sagacity above-mentioned.

The second of the four methods proposed is, that of bringing the unknown quantity to an equation, and putting it into a form susceptible of all the algebraic operations. Now to this answers, in philosophy, the art of giving names, expressing nothing definite, as to manner, quantity, &c. and then inserting these names, or indefinite terms, in all the enunciations of the phænomena, to see whether, from a comparison of these enunciations with each other, where the terms are used in the greatest latitude, some restrictions, something definite in manner, degree, or mutual relation, will not result. Things that are quite unknown have often fixed relations to one another, and sometimes relations to things known, which, though not determinable with certainty and precision, may yet be determined in some probable manner, or within certain limits. Now as in algebra it is impossible to express the relation of the unknown quantity to other quantities known or unknown, till it has a symbol assigned to it of the same kind with those that denote the others; so in philosophy we must give names to unknown quantities, qualities, causes, &c. not in order to rest in them, as the Aristotelians did, but to have a fixed expression, under which to treasure up all that can be known of the unknown cause, &c. in the imagination and memory, or in writing for future inquirers.

But then it is necessary, for the same reasons, that these terms should have no more of secondary ideas from prior associations, than the terms x and y in algebra.—Whence, if we use old terms excluding the old associations, the reader should be made aware of this at first, and incidentally reminded of it afterwards. Sir Isaac Newton has used the words *æther*, *attraction*, and some others, in this way, not resting in them, but enumerating a great variety of phænomena; from the due comparison of which with each other, and with such as farther observation and experiments shall suggest, their laws and action will, perhaps, be discovered hereafter; so that we may be able to predict the phænomena. There is also an instance of the proper manner of reasoning concerning the knowable relations of unknown things in Mr. Mede's *Clavis Apocalypica*.

The third method is that of approximating to the roots of equations. Here a first position is obtained, which, though not accurate, approaches, however, to the truth. From this, applied to the equations, a second position is deduced, which approaches nearer to the truth than the first; from the second, a third, &c. till the analyst obtains the true root, or such an approximation as is practically equivalent, every preceding discovery being made the foundation for a subsequent one, and the equation resolving itself, as it were, gradually. Now this is indeed the way, in

which all advances in science are carried on; and scientific persons are in general aware, that it is and must be so. However, I thought it not improper to illustrate this general process by a parallel taken from algebra, in which there is great exactness and beauty. Besides, writers do not often dispose their arguments and approximations in this way, though for want of it they lose much of their clearness and force; and, where the writer does this, the reader is frequently apt to overlook the order of proofs and positions.

Sir Isaac Newton's *Optics*, *Chronology*, and *Comment on Daniel*, abound with instances to this purpose: and it is probable, that his great abilities and practice in algebraic investigations led him to it insensibly. In his *Chronology* he first shews in gross, that the technical chronology of the ancient Greeks led them to carry their authorities higher than the truth; and then, that the time of the Sesostris mentioned by the Greek historians was near that of Sesac mentioned in the Old Testament; whence it follows, that these two persons were the same; and consequently, that the exact time of Sesostris's expedition may now be fixed by the Old Testament. And now, having two points absolutely fixed, *viz.* the expeditions of Sesostris and Xerxes, he fixes all the most remarkable intermediate events; and these being also fixed, he goes on to the less remarkable ones in the Greek history. And the chronology of the Greeks being rectified, he makes use of it to rectify the cotemporary affairs of the Egyptians, Assyrians, Babylonians, Medes, and Persians, making use of the preceding step every where, for the determination of the subsequent one. He does also, in many cases, cast light and evidence back from the subsequent ones upon the precedent. But the other is his own order of proof, and ought to be that in which those who call his chronology in question should proceed to inquire into it.

The fourth and last method is that used by decyphers, in investigating words written in unknown characters, or in known ones substituted for one another, according to secret and complex laws. The particular methods by which this is done are only known to those who study and practise this art: however, it is manifest in general, that it is an algebra of its own kind, and that it bears a great resemblance to the three foregoing methods; also, that it may be said, with justness and propriety in general, that philosophy is the art of decyphering the mysteries of nature; that criticism bears an obvious relation to decyphering; and that every theory which can explain all the phænomena, has all the same evidence in its favour, that it is possible the key of a cypher can have from its explaining that cypher. And if the cause assigned by the theory have also its real existence proved, it may be compared to the explanation of a cypher; which may be verified by the evidence of the person who writes in that cypher.

These speculations may seem uncouth to those who are not

conversant in mathematical inquiries; but to me they appear to cast light and evidence upon the methods of pursuing knowledge in other matters, to sharpen the natural sagacity, and to furnish *loci* for invention. It appears also not impossible, that future generations should put all kinds of evidences and inquiries into mathematical forms; and, as it were, reduce Aristotle's ten Categories, and Bishop Wilkins's forty *Summa Genera*, to the head of quantity alone, so as to make mathematics and logic, natural history and civil history, natural philosophy and philosophy of all other kinds, coincide *omni ex parte*.

I will add two more remarks relating to the present subject.

First, then, as in many mechanical problems, which fall strictly under the consideration of mathematicians, the quantities considered depend on several others, so as to increase in the simple or compound, direct or inverse, ratio of several others, and not to be greatest or least, when one or two of these are so, but when the *factum* of the proper powers of all is so; so throughout natural philosophy, in physic, in the analysis of the mind, &c., it is necessary to inquire, as carefully as we can, upon how many considerable causes each effect depends; also whether the ratios be simple or compound, direct or inverse. For though it will seldom happen, that one can bring the practical problems that occur in real life, to an exact estimate in this way, yet one may avoid part of that uncertainty and confusion, to which persons who take things merely in the gross are liable. Or, in other words, it is better in every thing to have probable or tolerable limits for the *data*, with a regular method of computation, or even an approximation thereto, than to have only such gross and general conceptions, as result from the more or less frequent recurrency of impressions, even though they be somewhat improved by natural or acquired sagacity, arising, in a kind of implicit indefinite way, from experience.

Secondly, it seems to me, that the rays of light may be considered as a kind of fluxions in respect of the biggest component particles of matter; I mean those upon which Sir Isaac Newton supposes the colours of natural bodies, and the changes effected in chemical processes, to depend. For, as the increments of variable quantities, when diminished so as to bear no finite ratio to the quantities of which they are the increments, shew, in a simple way, the velocities with which these quantities are increased; and so give rise to the determination of fluxions from fluents, and fluents from fluxions, and to all the applications of these determinations to real quantities, all which is entirely grounded upon the supposition, that the fluxions are not increments, but relative nothings; so, since the rays of light are so small in respect of the biggest component particles, as to be relatively and practically nothing in respect of them, to bear no relation to any of them, all the differences observable in the actions of light upon these particles, and of these particles upon

light, will depend purely upon the differences of these particles in respect of one another; it not being possible that any part of them should arise from the comparative magnitude of light, which is equally nothing in respect of them all. And thus it seems, that optics and chemistry will, at last, become a master-key for unlocking the mysteries in the constitution of natural bodies, according to the method recommended by Sir Isaac Newton.

Let A, B, C , be three particles, whose magnitude are 3, 2, and 1, respectively. It is evident, that the mutual influences between A and C, B and C , cannot correspond entirely to the ratio which A and B bear to each other, because C bears a different ratio to A from that which it bears to B ; and this difference of ratios must have its share in the effects of A and B upon C : whereas had C been a particle of light, it would have been equally nothing in respect both of A and B ; and so the mutual influences between A and C, B and C , would entirely correspond to the difference between A and B , and decypher it. Thus the particles of light, by being infinitely smaller than the biggest component ones of natural bodies, may become a kind of *communis norma*, whereby to measure their active powers.

PROP. LXXXVIII.—*To make a general Application of the Theory of this and the foregoing Section, to the several branches of Science.*

ALL the sciences, knowledge of all kinds, may be reduced to the seven general heads following, when they are understood in the latitude here expressed.

First, Philology, or the knowledge of words, and their significations. It comprehends under it the arts of grammar and criticism. Rhetoric and poetry may be referred to it.

Secondly, Mathematics, or the doctrine of quantity. It may be divided into three branches; *viz.* arithmetic, which makes use of numbers as the exponents of quantity; geometry, which uses figures for the same purpose; and algebra, which comprehends both these, and whose symbols are accordingly so general, as to represent the symbols of the two foregoing parts.

Thirdly, Logic, or the art of using words, considered as symbols, for making discoveries in all the branches of knowledge. It presupposes philology to a certain degree; and must evidently, in the view here given of it, receive great illustrations from mathematics, which is the art of making discoveries in the single category of quantity, by means of the simplest kinds of symbols.

Fourthly, Natural history, or regular and well-digested accounts of the phænomena of the natural world. It may be distributed into six parts, *i. e.* into the natural histories of animals, plants, minerals, the earth considered as a terraqueous globe, the atmosphere, and the heavenly bodies.

Fifthly, Civil history, or regular accounts of the transactions of the world politic. To this head must be referred that part of geography which treats of the present manners, customs, laws, religion, &c. of the several nations of the world.

Sixthly, Natural philosophy, or the application of the arts of mathematics and logic to the phænomena of natural and civil history communicated to us by means of our previous skill in philology, in order to decypher the laws by which the external world is governed, and thereby to predict or produce such phænomena, as we are interested in. Its parts are mechanics, hydrostatics, pneumatics, optics, astronomy, chemistry, the theories of the several manual arts and trades, medicine and psychology, or the theory of the human mind, with that of the intellectual principles of brute animals.

Seventhly, Religion, which might also be called divine philosophy. This requires the application of all the foregoing branches of knowledge to each other in an endless reciprocation, in order to discover the nature of the invisible world, of God, of good and evil spirits, and of the future state, which commences at death, with all the duties that result from these considerations. The arts of ethics, and politics, are to be referred to this head. For, though these arts are supposed to teach individuals, and bodies politic, how to arrive at their *summum bonum* in the present world, yet, since the rules given for this purpose either are or ought to be the same with those which teach mankind how to secure a happy futurity, it is plain, that these arts are included within the precepts of religion.

All these branches of knowledge are very much involved in each other; so that it is impossible to make any considerable progress in any one, without the assistance of most or all the rest. However, each has also an independent part, which being laid down as a foundation, we may proceed to improve it by the light afforded from the independent parts of the other branches. I will here subjoin a few hints concerning the proper manner of proceeding in each branch.

OF PHILOLOGY.

The rudiments of the native language are learnt in infancy, by the repeated impressions of the sounds, at the same time that the things signified are presented to the senses, as has been already explained. Words standing for intellectual things, particles, &c., are decyphered by their connexion with other words, by their making parts of sentences, whose whole import is known. Grammatical analogy and derivation do also, in many cases, discover the import of words. And many words may be explained by definitions. Where these several ways concur, the sense is soon learnt, and steadily fixed; where they oppose each other, confusion arises for a time, but the strongest authority prevails at last. Translations and dictionaries explain the words

of unknown languages by those of known ones. Afterwards we decypher by the context, deduce the sense from analogy, &c. These last methods reflect authority upon the translations and dictionaries, where they agree with them. In living languages the import of the principal words may be ascertained with ease and certainty; and these being fixed, the rest become determinable and decypherable by proper care and caution, so that no practical errors can remain. In dead languages the difficulty is greater; but the certainty that ultimately results, is not less practically in respect of the bulk of the language, on account of the number of coincidences. But much remains undone yet, particularly in respect of the Hebrew language. Logic, natural and civil history, philosophical and religious knowledge, may all, in their several ways, contribute to fix the true sense of words. And the fixing the senses of words, by all the methods here enumerated, may be called the art of making dictionaries. It receives great assistance from the art of grammar; and is at the same time the main foundation of it. This last art has also the same connexions with the other branches of knowledge; as that of fixing the senses of words. The same may be said of criticism; which may be defined the art of restoring the corrupted passages of authors, and ascertaining their genuine sense, and method of reasoning.

In all these things there seems to be a sufficient foundation for unity of opinion amongst those that are truly learned and candid; at least in all important points. And, in fact, the differences here amongst the *literati*, are plainly owing, in great measure, to ambition, envy, affectation of singularity and novelty, &c. All these things magnify the ideas and coalescences, which a man calls his own; those of his party, &c. associate ideas of truth, excellence, genius, &c. to them, and opposite ones to all that the supposed adversary delivers.

No sceptic can proceed so far as to disclaim the sense of the words of his native tongue, or of a foreign one, which he understands. The things signified thereby must and will be suggested by, and coalesce with, the sounds; so that he cannot but understand what he hears and reads. And this is all the truth that belongs to philology as such. The truth of the things expressed in words is a consideration belonging to the several other branches of knowledge respectively.

As the plain didactic style is intended merely to inform the understanding, so the rhetorical and poetical styles are intended to excite the passions by the associations which figurative terms and forms of expression, flowing periods, numbers, rhymes, similes, fables, fictions, &c. draw after them.

Painting and music produce a like effect upon the passions, as rhetoric and poetry, and by means that are not very unlike. But I shall have occasion hereafter to say something more concerning all these imaginative arts.

OF MATHEMATICS.

Mathematics are that branch of knowledge which is the most independent of any, and the least liable to uncertainty, difference of opinion, and sceptical doubts. However, uncertainties, differences, and doubts, have arisen here; but then they have been chiefly about such parts of mathematics as fall under the consideration of the logician. For, it seems impossible that a man who has qualified himself duly, should doubt about the justness of an arithmetical, algebraical, or fluxional operation, or the conclusiveness of a geometrical demonstration.

The words point, line, surface, infinitely great, infinitely little, are all capable of definitions, at least of being explained by other words. But then these words cannot suggest any visible ideas to the imagination, but what are inconsistent with the very words themselves. However, this inconsistency has no effect upon the reasoning. It is evident, that all that can be meant by the three angles of a triangle being equal to two right ones, or the parabolic area to $\frac{2}{3}$ of the circumscribing parallelogram, or deduced from these positions, must always hold in future fact; and this, as observed above, is all the truth that any thing can have. In fluxional conclusions it is demonstratively evident, that the quantity under consideration cannot be greater or less by any thing assignable, than according to the fluxional conclusion; and this seems to me entirely the same thing as proving it to be equal.

I cannot presume to suggest any particular methods by which farther discoveries may be made in mathematical matters, which are so far advanced, that few persons are able to comprehend even what is discovered and unfolded already. However, it may not be amiss to observe, that all the operations of arithmetic, geometry, and algebra, should be applied to each other in every possible way, so as to find out in each something analogous to what is already known and established in the other two. The application of the arithmetical operations of division and extraction of roots to algebraic quantities, and of the method of obtaining the roots of numeral equations by approximation to specious ones, as taught by Sir Isaac Newton, have been the sources of the greatest fluxional discoveries.

OF LOGIC.

It is the purport of this and the foregoing section, to give imperfect rudiments of such an art of logic, as is defined above, *i. e.* as should make use of words in the way of mathematical symbols, and proceed by mathematical methods of investigation and computation in inquiries of all sorts. Not that the *data* in the sciences are as yet, in general, ripe for such methods; but

they seem to tend to this more and more perpetually, in particular branches, so that it cannot be amiss to prepare ourselves, in some measure, previously.

Logic, and metaphysics, which are nearly allied to logic, seem more involved in obscurity and perplexity, than any other part of science. This has probably been the chief source of scepticism, since it appears necessary, that that part of knowledge, which is the basis of all others, which is to shew wherein certainty, probability, possibility, improbability, and impossibility, consist, should itself be free from all doubt and uncertainty.

It seems also, that as logic is required for the basis of the other sciences, so a logic of a second order is required for a basis to that of the first, of a third for that of a second, and so on *sine limite*: which, if it were true, would, from the nature of dependent evidences, prove that logic is either absolutely certain, or absolutely void of all probability. For, if the evidence for it be ever so little inferior to unity, it will, by the continual infinite multiplication required in dependent evidences infinitely continued, bring itself down to nothing. Therefore, *e converso*, since no one can say, that the rules of logic are void of all probability, the *summum genus* of them must be certain. This *summum genus* is the necessary coalescence of the subject with the predicate. But the argument here alleged is merely one *ad hominem*, and not the natural way of treating the subject. The necessary coalescence just spoken of carries its own evidence with it. It is necessary from the nature of the brain, and that in the most confirmed sceptic, as well as in any other person. And we need only inquire into the history of the brain, and the physiological influences of words and symbols upon it by association, in order to see this. I am also inclined to believe, that the method here proposed of considering words and sentences as impressions, whose influence upon the mind is entirely to be determined by the associations heaped upon them in the intercourses of life, and endeavouring to determine these associations, both analytically and synthetically, will cast much light upon logical subjects, and cut off the sources of many doubts and differences.

As the theories of all other arts and sciences must be extracted from them, so logic, which contains the theory of all these theories, must be extracted from these theories; and yet this is not to reason in a circle in either case, since the theory is first extracted from self-evident or allowed particulars, and then applied to particulars not yet known, in order to discover and prove them.

It may not be amiss here to take notice how far the theory of these papers has led me to differ in respect of logic, from Mr. Locke's excellent *Essay on Human Understanding*, to which the world are so much indebted for removing prejudices and incumbrances, and advancing real and useful knowledge.

First, then, It appears to me, that all the most complex ideas

arise from sensation; and that reflection is not a distinct source, as Mr. Locke makes it.

Secondly, Mr. Locke ascribes ideas to many words, which, as I have defined idea, cannot be said to have any immediate and precise ones; but only to admit of definitions. However, let definition be substituted instead of idea, in these cases, and then all Mr. Locke's excellent rules concerning words, delivered in his third book, will suit the theory of these papers.

As to the first difference, which I think may be called an error in Mr. Locke, it is, however, of little consequence. We may conceive, that he called such ideas as he could analyse up to sensation, ideas of sensation; the rest ideas of reflection, using reflection, as a term of art, denoting an unknown quantity. Besides which, it may be remarked, that the words which, according to him, stand for ideas of reflection, are in general words, that, according to the theory of these papers, have no ideas, but definitions only. And thus the first difference is, as it were, taken away by the second; for, if these words have no immediate ideas, there will be no occasion to have recourse to reflection as a source of ideas; and, upon the whole, there is no material repugnancy between the consequences of this theory, and any thing advanced by Mr. Locke.

The ingenious Bishop Berkeley has justly observed against Mr. Locke, that there can be no such thing as abstract ideas, in the proper sense of the word idea. However, this does not seem to vitiate any considerable part of Mr. Locke's reasoning. Substitute definition for idea in the proper places, and his conclusions will hold good in general.

OF NATURAL HISTORY.

Natural history is a branch of knowledge, which, at the first view, appears to have a boundless extent, and to be capable of the utmost practical precision and certainty, if sufficient care and industry be employed. And, in fact, the doubts and differences here are not very considerable; they do also grow less and less every day, by the great quantity of knowledge of this kind, which is poured in from all quarters, as learning and inquisitiveness diffuse themselves more and more amongst all nations, and all orders of men.

The materials for natural history, which any single person can collect from his own observation, being very inconsiderable, in respect of those which he wants, he is obliged to have recourse to others; and therefore must depend upon their testimony, just as in civil history. And our assent, in each case, being excited by a variety of concurrent proofs, and of coincident circumstances, transfers part of its authority upon the other. We believe testimony in natural history, because we do in civil, and *vice versá*: and have a variety of concurrent confirmations in both cases.

However, as the general facts are thus practically certain, so the subordinate ones are, in many cases, liable to doubts. And it is evident, that, for the resolution of these doubts in natural history, we must borrow the assistance of all the other branches of science; and that some skill in philology must be attained, before we can hope to arrive at any tolerable perfection in natural or civil history. Natural history is the only sure basis of natural philosophy, and has some influence upon all the other sciences.

OF CIVIL HISTORY.

The general evidences upon which civil history is grounded, have been just hinted at. It is manifest, that the discoveries of natural historians, astronomers, linguists, antiquaries, and philosophers of all kinds, have brought great light and evidence upon this branch of knowledge within the last two centuries; and are likely to do so more and more.

The ancient history of the kingdoms of Asia Minor, Egypt, and Greece, will probably be much better understood, when the inhabitants of those countries become learned.

He that would search into the first ages of the world, must take the Scriptures for his guide, lay down the truth of these as unquestionable, and force all other evidences into that position. This seems to have been the method taken by Sir Isaac Newton in his Chronology, and which at last unfolded to him the proper method of detecting and correcting the mistakes in the ancient technical chronology of the Greeks by itself.

The concurrent independent evidences in the grand points of history are so much more numerous than the dependent ones, and most of them so strong, singly taken, that the deficiency from certainty in these grand points cannot be distinguished by the human mind. And therefore it is a practical error of great importance to suppose, that such kind of historical evidences are inferior to mathematical ones. They are equal, as far as we have any thing to do with them; *i. e.* can judge of them, or be influenced by them. All future facts depending on them have as good a basis, as those depending on mathematical evidences. I speak here of principal matters, such as the conquests of Alexander and Julius Cæsar, and the main history, common and miraculous, of the Old and New Testaments. Till our knowledge be applied to the predicting or producing future facts, no sort of it is of use or importance to us; and the application of mathematical knowledge is just as much exposed to the several kinds and degrees of uncertainty, as that of any other. That the evidence for principal historical facts is not, in general, considered as equal to mathematical certainty, arises partly from the just mentioned ill-grounded affirmations of learned men; partly from the complexity of the historical proofs, which require time and consideration to digest them; and partly because the uncertainty

attending subordinate facts has diluted the evidence of the principal and unquestionable ones, since the same general forms of expression are, and must be used in both cases.

OF NATURAL PHILOSOPHY.

It may be observed of natural philosophy, that in the parts where the ideas are simple, clear, and of the visible kind, or adequately expounded by such, and the method of investigation and computation mathematical, as in mechanics, hydrostatics, pneumatics, optics, and astronomy, the doubts and diversities of opinion which arise, are inconsiderable. But in the theories of chemistry, of manual arts and trades, of medicine, and, in general, of the powers and mutual actions of the small parts of matter, the uncertainties and perplexities are as great as in any part of science. For the small parts of matter, with their actions, are too minute to be the objects of sight; and we are as yet neither possessed of a detail of the phænomena sufficiently copious and regular, whereon to ground an investigation; nor of a method of investigation, subtle enough to arrive at the subtlety of nature even in the biggest component particles, much less in the particles of the smaller orders; and how far the number of orders may go, is impossible to say. I see no contradiction in supposing it infinite, and a great difficulty in stopping at any particular size.

Suppose the number of orders of particles infinite, or at least very great; and that particles of all orders are perpetually flying off from all bodies with great velocity. First, This may occasion the gravitation of the great bodies of the universe to each other, by the impulse of the smaller corpuscles upon particles of sizes equal to each other in the greater bodies, the impulses of the larger corpuscles, and upon particles, of unequal size, being evanescent in respect of the foregoing impulses. But where particles approach near to one another, and the corpuscles bear some finite ratio to the particles so as not to pervade them freely, before they come to particles of equal size to each other, but affect them in proportion to their surfaces, not solid content, and I suppose from many other causes, attractions of other kinds may arise; and if one or both of the contiguous particles send out many corpuscles with great force; also if these corpuscles effervesce together in the intermediate space, and gain new forces thence, &c. repulsive powers may rise. If it be reasonable to suppose many orders of particles, it is also reasonable to suppose, that their powers and properties are somewhat analogous to one another; and that those of the larger particles arise from, and are compounded of, those of the next less in size, and so on; just as the whole gravity of the moon is compounded of the gravity of all its parts. But these are all very gross and uncertain conjectures.

In the mean time, it seems proper to use the words magnetism;

electricity, attraction of cohesion, *spiritus rector*, acrimony of the animal juices, &c. as terms of art, as unknown causes of known effects. But then they ought always to be defined, the definitions rigorously kept to, and all secondary ideas from prior associations excluded. Were this done in chemistry and medicine, it would produce a great reformation, and at once cut off many incumbrances, perplexities, and obscurities. The *vis inertiae* of bodies, and the equivalent terms, were once terms of this kind, standing for the unknown cause of known phænomena. By degrees these phænomena were digested into order, the terms contributing thereto, and the three several kinds of them, classed respectively under the three laws of nature, which have been applied synthetically since, and given rise to the greatest mechanical discoveries. The same may be observed of gravity. And if the laws of magnetism, electricity, and the attraction of cohesion, could be ascertained in the same manner as the laws of the *vis inertiae* and gravity, we should be enabled to predict and produce many effects of great importance to us.

It is of the highest use to us in practical matters, that the properties of bodies are so closely connected with each other. Thus the colour and specific gravity of a metal, the visible idea of a plant, also its taste or smell, give us a practical certainty in respect of all the other properties. This close connexion of the properties follows undoubtedly from the powers and mutual actions of the small parts; so that, if we could arrive at the knowledge of these last, we should immediately see not only the reason of all the properties of bodies, which are known at present, but be able to discover innumerable other relative ones. In the mean time we must endeavour to discover, digest, and register, the various properties of natural bodies, as they rise to view from suitable experiments; and thus prepare the way for those who shall hereafter decypher their internal constitution.

OF RELIGION.

All the foregoing branches of knowledge ought to be considered as mere preparatories and preliminaries to the knowledge of religion, natural and revealed. They all, in their several orders and degrees, concur to establish the principal doctrines and duties of it; and these, when established, become the best means for attaining knowledge. The benevolence of the Deity, and the doctrine of final causes, are the best clew for guiding us through the labyrinths of natural phænomena, and particularly of those which relate to animals. The Scriptures are the only book which can give us any just idea of ancient times, of the original of mankind, their dispersion, &c. or of what will befall them in future generations. As to future things, predicted in the Scriptures, we can as yet collect nothing more than general intimations; but there is reason to believe, that succeeding generations

may arrive at a far more precise interpretation of prophecy. It may also be, that much philosophical knowledge is concealed in the Scriptures; and that it will be revealed in its due time. The analogy between the word and works of GOD, which is a consideration of the religious kind, seems to comprehend the most important truths. To all this it must be added, that the temper of mind prescribed by religion, *viz.* modesty, impartiality, sobriety, and diligence, are the best qualifications for succeeding in all inquiries. Thus religion comprehends, as it were, all other knowledge, advances, and is advanced by all; at the same time that where there is a morally good disposition, a very small portion of other knowledge is sufficient for the attainment of all that is necessary for virtue and comfort here, and eternal happiness hereafter.

The great differences of opinion, and contentions which happen in religious matters, are plainly owing to the violence of men's passions, more than to any other cause. Where religion has its due effect in restraining these, and begetting true candour, we may expect an unity of opinion, both in religious and other matters, as far as is necessary for useful practical purposes.

SECT. III.

OF THE AFFECTIONS IN GENERAL.

PROP. LXXXIX.—*To explain the Origin and Nature of the Passions in general.*

HERE we may observe,

First, That our passions or affections can be no more than aggregates of simple ideas united by association. For they are excited by objects, and by the incidents of life. But these, if we except the impressed sensations, can have no power of affecting us, but what they derive from association; just as was observed above of words and sentences.

Secondly, Since therefore the passions are states of considerable pleasure or pain, they must be aggregates of the ideas, or traces of the sensible pleasures and pains, which ideas make up by their number, and mutual influence upon one another, for the faintness and transitory nature of each singly taken. This may be called a proof *à priori*. The proof *à posteriori* will be given, when I come to analyse the six classes of intellectual affections, *viz.* imagination, ambition, self-interest, sympathy, theopathy, and the moral sense.

Thirdly, As sensation is the common foundation of all these, so each in its turn, when sufficiently generated, contributes to generate and model all the rest. We may conceive this to be done in the following manner. Let sensation generate imagination; then will sensation and imagination together generate ambition; sensation, imagination, and ambition, self-interest; sensation, imagination, ambition, and self-interest, sympathy; sensation, imagination, ambition, self-interest, and sympathy, theopathy; sensation, imagination, ambition, self-interest, sympathy, and theopathy, the moral sense: and, in an inverted order, imagination will new model sensation; ambition, sensation and imagination; self-interest, sensation, imagination, and ambition; sympathy, sensation, imagination, ambition, and self-interest; theopathy, sensation, imagination, ambition, self-interest, and sympathy; and the moral sense, sensation, imagination, ambition, self-interest, sympathy, and theopathy: till at last, by the numerous reciprocal influences of all these upon each other, the passions arrive at that degree of complexness, which is observed in fact, and which makes them so difficult to be analysed.

Fourthly, As all the passions arise thus from pleasure and pain, their first and most general distribution may be into the two classes of love and hatred, *i. e.* we may term all those affections of the pleasurable kind, which objects and incidents raise in us, love; all those of the painful kind, hatred. Thus we are said to love not only intelligent agents of morally good dispositions, but also sensual pleasures, riches, and honours; and to hate poverty, disgrace, and pain, bodily and mental.

Fifthly, When our love and hatred are excited to a certain degree, they put us upon a variety of actions, and may be termed desire and aversion; by which last word I understand an active hatred. Now the actions which flow from desire and aversion, are entirely the result of associated powers and circumstances, agreeable to the twentieth, twenty-first, and twenty-second propositions, with their corollaries. The young child learns to grasp and go up to the play-thing that pleases him, and to withdraw his hand from the fire that burns him, at first from the mechanism of his nature, and without any deliberate purpose of obtaining pleasure, and avoiding pain, or any explicit reasoning about them. By degrees he learns, partly from the recurrency of these mechanical tendencies, inspired by God, as one may say, by means of the nature which He has given us, and partly from the instruction and imitation of others, to pursue every thing which he loves and desires, fly from every thing which he hates; and to reason about the method of doing this, just as he does upon other matters. And, because mankind are for the most part pursuing or avoiding something or other, the desire of happiness, and the aversion to misery, are supposed to be inseparable from, and essential to, all intelligent natures. But this does not seem to be an exact or correct way of speaking. The

most general of our desires and aversions are factitious, *i. e.* generated by association; and therefore admit of intervals, augmentations, and diminutions. And, whoever will be sufficiently attentive to the workings of his own mind, and the actions resulting therefrom, or to the actions of others, and the affections which may be supposed to occasion them, will find such differences and singularities in different persons, and in the same person at different times, as no way agree to the notion of an essential, original, perpetual desire of happiness, and endeavour to attain it; but much rather to the factitious associated desires and endeavours here asserted. And a due regard to this, will, as it seems to me, solve many difficulties and perplexities found in treatises upon the passions. The writers upon this subject have begun in the synthetical method prematurely, and without having premised the analytical one. For it is very true that, after general desires and endeavours are generated, they give rise in their turn to a variety of particular ones. But the original source is in the particular ones, and the general ones never alter and new-model the particular ones so much, as that there are not many traces and vestiges of their original mechanical nature and proportions remaining.

Sixthly, The will appears to be nothing but a desire or aversion sufficiently strong to produce an action that is not automatic primarily or secondarily. At least it appears to me, that the substitution of these words for the word *will* may be justified by the common usage of language. The will is therefore that desire or aversion, which is strongest for the then present time. For if any other desire was stronger, the muscular motion connected with it by association would take place, and not that which proceeds from the will, or the voluntary one, which is contrary to the supposition. Since therefore all love and hatred, all desire and aversion, are factitious, and generated by association, *i. e.* mechanically, it follows that the will is mechanical also.

Seventhly, Since the things which we pursue do, when obtained, generally afford pleasure, and those which we fly from affect us with pain, if they overtake us, it follows that the gratification of the will is generally attended or associated with pleasure, the disappointment of it with pain. Hence a mere associated pleasure is transferred upon the gratification of the will; a mere associated pain upon the disappointment of it. And if the will was always gratified, this mere associated pleasure would, according to the present frame of our natures, absorb, as it were, all our other pleasures; and thus by drying up the source from whence it sprung, be itself dried up at last: and the first disappointments, after a long course of gratification, would be intolerable. Both which things are sufficiently observable, in an inferior degree, in children that are much indulged, and in adults, after a series of successful events. Gratifications of the

will without the consequent expected pleasure, and disappointments of it without the consequent expected pain, are particularly useful to us here. And it is by this amongst other means, that the human will is brought to a conformity with the divine; which is the only radical cure for all our evils and disappointments, and the only earnest and medium for obtaining lasting happiness.

Eighthly, We often desire and pursue things which give pain rather than pleasure. Here it is to be supposed, that at first they afforded pleasure, and that they now give pain on account of a change in our nature and circumstances. Now, as the continuance to desire and pursue such objects, notwithstanding the pain arising from them, is the effect of the power of association, so the same power will at last reverse its own steps, and free us from such hurtful desires and pursuits. The recurrency of pain will at last render the object undesirable and hateful. And the experience of this painful process, in a few particular instances, will at last, as in other cases of the same kind, beget a habit of ceasing to pursue things, which we perceive by a few trials, or by rational arguments, to be hurtful to us upon the whole.

Ninthly, A state of desire ought to be pleasant at first, from the near relation of desire to love, and of love to pleasure and happiness. But in the course of a long pursuit, so many fears and disappointments, apparent or real, in respect of the subordinate means, and so many strong agitations of mind passing the limits of pleasure, intervene, as greatly to chequer a state of desire with misery. For the same reasons states of aversion are chequered with hope and comfort.

Tenthly, Hope and fear are, as just now observed, the attendants upon desire and aversion. These affect us more or less, according to the more or less frequent recurrency of the pleasing and painful ideas, according to the greater or less probability of the expected event, according to the greater or less distance of time, &c. the power of association displaying itself every where in the agitations of mind excited by these passions. It is particularly remarkable here that our hopes and fears rise and fall with certain bodily dispositions, according as these favour or oppose them.

Eleventhly, Joy and grief take place when the desire and aversion, hope and fear, are at an end; and are love and hatred, exerted towards an object which is present either in a sensible manner, or in a rational one, *i. e.* so as to occupy the whole powers of the mind, as sensible objects, when present, and attended to, do the external senses. It is very evident, that the objects of the intellectual pleasures and pains derive their power of thus affecting the mind from association.

Twelfthly, After the actual joy and grief are over, and the object withdrawn, there generally remains a pleasing or dis-

pleasing recollection or resentment, which recurs with every recurrency of the idea of the object, or of the associated ones. This recollection keeps up the love or hatred. In like manner the five grateful passions, love, desire, hope, joy, and pleasing recollection, all enhance one another; as do the five ungrateful ones, hatred, aversion, fear, grief, and displeasing recollection. And the whole ten, taken together, comprehend, as appears to me, all the general passions of human nature.

SECT. IV.

OF MEMORY.

PROP. XC.—*To examine how far the Phænomena of Memory are agreeable to the foregoing Theory.*

MEMORY was defined in the introduction to be that faculty by which traces of sensations and ideas recur, or are recalled, in the same order and proportion, accurately or nearly, as they were once presented.

Now here we may observe,

First, That memory depends entirely or chiefly on the state of the brain. For diseases, concussions of the brain, spirituous liquors, and some poisons, impair or destroy it; and it generally returns again with the return of health, from the use of proper medicines and methods. And all this is peculiarly suitable to the notion of vibrations. If sensations and ideas arise from peculiar vibrations, and dispositions to vibrate, in the medullary substance of the brain, it is easy to conceive, that the causes above alleged may so confound the sensations and ideas, as that the usual order and proportion of the idea shall be destroyed.

Secondly, The rudiments of memory are laid in the perpetual recurrency of the same impressions, and clusters of impressions. How these leave traces, in which the order is preserved, may be understood from the eighth, ninth, tenth, and eleventh propositions.

The traces which letters, and words, *i. e.* clusters of letters, leave, afford an instance and example of this. And, as in languages the letters are fewer than the syllables, the syllables than the words, and the words than the sentences, so the single sensible impressions, and the small clusters of them, are comparatively few in respect of the large clusters; and, being so, they must recur more frequently, so as the sooner to beget those traces which I call the rudiments or elements of memory. When these traces or ideas begin to recur frequently, this also con-

tributes to fix them, and their order, in the memory, in the same manner as the frequent impression of the objects themselves.

Thirdly, Suppose now a person so far advanced in life, as that he has learnt all these rudiments, *i. e.* that he has ideas of the common appearances and occurrences of life, under a considerable variety of subordinate circumstances, which recur to his imagination from the slightest causes, and with the most perfect facility; and let us ask, how he can be able to remember or recollect a past fact, consisting of one thousand single particulars, or of one hundred such clusters as are called the rudiments of memory; ten single particulars being supposed to constitute a rudiment? First, then, We may observe, that there are only one hundred links wanting in the chain; for he has already learnt considerable exactness in the subordinate circumstances of the one hundred clusters; and perfect exactness is not to be supposed or required.—Secondly, The one hundred clusters recur again and again to the imagination for some time after the fact, in a quick and transient manner, as those who attend sufficiently to what passes in their own minds may perceive; and this both makes the impression a little deeper, and also serves to preserve the order. If the person attempts to recollect soon after the impression, the effect remaining in the brain is sufficient to enable him to do this with the accuracy required and experienced; if a longer time intervene, before he attempts to recollect, still the number of involuntary recurrences makes up in some measure for the want of this voluntary recollection. However, the power of recollection declines in general, and is entirely lost by degrees. It confirms this reasoning, that a new set of strong impressions destroys this power of recollection. For this must both obliterate the effects of the foregoing impressions, and prevent the recurrency of the ideas.—Thirdly, As the single impressions, which make the small clusters, are not combined together at hazard, but according to a general tenor in nature, so the clusters which make facts succeed each other according to some general tenor likewise. Now this both lessens the number of varieties, and shews that the association between many of the clusters, or rudiments, or one hundred links supposed to be wanting, is cemented already. This may be both illustrated and exemplified by the observation, that it is difficult to remember even well-known words that have no connexion with each other, and more so to remember collections of barbarous terms; whereas adepts in any science remember the things of that science with a surprising exactness and facility.—Fourthly, Some clusters are excluded from succeeding others, by ideas of inconsistency, impossibility, and by the methods of reasoning, of which we become masters as we advance in life.—Fifthly, The visible impressions which concur in the past fact, by being vivid, and preserving the order of place, often contribute greatly to preserve the order of time, and to suggest the clusters which may be

wanting.—Sixthly, It is to be observed, that as we think in words, both the impressions and the recurrences of ideas will be attended with words; and these words, from the great use and familiarity of language, will fix themselves strongly in the fancy, and by so doing bring up the associated trains of ideas in the proper order, accurately or nearly. And thus, when a person relates a past fact, the ideas do in some cases suggest the words, whilst in others the words suggest the ideas. Hence illiterate persons do not remember nearly so well as others, *cæteris paribus*. And I suppose the same is true of deaf persons in a still greater degree. But it arises hence also, that many mistakes in the subordinate circumstances are committed in the relations of past facts, if the relater descend to minute particulars. For the same reasons these mistakes will be so associated with the true facts after a few relations, that the relater himself shall believe that he remembers them distinctly.—Seventhly, The mistakes which are committed both on the foregoing account and others, make considerable abatements in the difficulty here to be solved.

Fourthly, Let it now be asked, in what the recollection of a past fact, consisting of one hundred clusters, as above, differs from the transit of the same one hundred clusters, over the fancy, in the way of a reverie? I answer, partly in the vividness of the clusters, partly and principally in the readiness and strength of the associations, by which they are cemented together. This follows from what has been already delivered; but it may be confirmed also by many other observations.—Thus, first, Many persons are known by relating the same false story over and over again, *i. e.* by magnifying the ideas, and their associations, at last to believe that they remember it. It makes as vivid an impression upon them, and hangs as closely together, as an assemblage of past facts recollected by memory.—Secondly, All men are sometimes at a loss to know whether clusters of ideas that strike the fancy strongly, and succeed each other readily and immediately, be recollections, or mere reveries. And the more they agitate the matter in the mind, the more does the reverie appear like a recollection. It resembles this, that if in endeavouring to recollect a verse, a wrong word, suiting the place, first occurs, and afterwards the right one, it is difficult during the then present agitation to distinguish the right one. But afterwards, when this agitation is subsided, the right word easily regains its place. Persons of irritable nervous systems are more subject to such fallacies than others. And madmen often impose upon themselves in this way, *viz.* from the vividness of their ideas and associations, produced by bodily causes. The same thing often happens in dreams. The vividness of the new scene often makes it appear like one that we remember, and are well acquainted with.—Thirdly, If the specific nature of memory consist in the great vigour of the ideas, and their associations,

then, as this vigour abates, it ought to suggest to us a length of time elapsed; and *vice versâ*, if it be kept up, the distance of time ought to appear contracted. Now this last is the case: for the death of a friend, or any interesting event, often recollected and related, appears to have happened but yesterday, as we term it, *viz.* on account of the vividness of the clusters, and their associations, corresponding to the nature of a recent event.— Fourthly, It is not, however, to be here supposed, that we have not many other ways of distinguishing real recollections from mere reveries. For the first are supported by their connexion with known and allowed facts, by various methods of reasoning, and having been related as real recollections, &c.

Fifthly, In like manner we distinguish a new place, book, person, &c. from one which we remember, supposing both to be presented in like circumstances. The parts, associates, &c. of that which we remember, strike us more strongly, are suggested by each other, and hang together, which does not hold of the new. The old does also suggest many associates, which a new one in like circumstances would not. And if from the then state of fancy, the distance of time, &c. there be any doubt of these things either with respect to the old or new, a like doubt arises in respect of the memory. An attentive person may observe, that he determines of such things, whether they be old or new, by the vividness of the ideas, and their power of suggesting each other, and foreign associates.

Some persons seem to suppose, that the soul surveys one object, the old for instance, and comparing it with the impressions which a similar new one would excite, calls the old one an object remembered. But this is like supposing an eye within the eye to view the pictures made by objects upon the *retina*. Not to mention, that the soul cannot in the same instant, during the same *τὸ ὅν* survey both the old and new, and compare them together; nor is there any evidence, that this is done in fact. A person who inquires into the nature of memory, may indeed endeavour to state the difference between the impressions of old and new, as I have done here; but this is a speculation that few persons concern themselves with, whereas all remember and apply the words relative to memory just as they do other words. We may conclude therefore, that the difference of vividness and connexion in the ideas, with the other associates of recollections, are a sufficient foundation for the proper use of the words relative to the memory, just as in other like cases.

Sixthly, The peculiar imperfection of the memory in children tallies with the foregoing account of this faculty; and indeed this account may be considered as a gross general history of the successive growth of the memory, in passing from childhood to adult age. Children must learn by degrees the ideas of single impressions, the clusters which I call rudiments, and the most usual connexions and combinations of these. They have also

the use of words, and of objects and incidents, as signs and symbols, with the proper method of reasoning upon them, to learn; and during their noviciate in these things their memories must labour under great imperfections. It appears also, that the imperfections peculiar to children correspond in kind as well as degree to the reasons here assigned for them. Their not being able to digest past facts in order of time is, in great measure, owing to their not having the proper use of the symbols, whereby time is denoted.

Seventhly, The peculiar imperfection of the memory in aged persons tallies also with the foregoing account. The vibrations, and dispositions to vibrate, in the small medullary particles, and their associations, are all so fixed by the callosity of the medullary substance, and by repeated impressions and recurrences, that new impressions can scarce enter, that they recur seldom, and that the parts which do recur bring in old trains from established associations, instead of continuing those which were lately impressed. Hence one may almost predict what very old persons will say or do upon common occurrences. Which is also the case frequently with persons of strong passions, for reasons that are not very unlike. When old persons relate the incidents of their youth with great precision, it is rather owing to the memory of many preceding memories, recollections, and relations, than to the memory of the thing itself.

Eighthly, In recovering from concussions, and other disorders of the brain, it is usual for the patient to recover the power of remembering the then present common incidents for minutes, hours, and days, by degrees; also the power of recalling the events of his life preceding his illness. At length he recovers this last power perfectly, and at the same time forgets almost all that passed in his illness, even those things which he remembered, at first, for a day or two. Now the reason of this I take to be, that upon a perfect recovery the brain recovers its natural state, *i. e.* all its former dispositions to vibrate; but that such as took place during the preternatural state of the brain, *i. e.* during his illness, are all obliterated by the return of the natural state. In like manner dreams, which happen in a peculiar state of the brain, *i. e.* in sleep, vanish, as soon as vigilance, a different state, takes place. But if they be recollected immediately upon waking, and thus connected with the state of vigilance, they may be remembered. But I shall have occasion to be more explicit on this head in the next Section.

Ninthly, It is very difficult to make any plausible conjectures why some persons of very weak judgments, not much below idiots, are endued with a peculiar extraordinary memory. This memory is generally the power of recollecting a large group of words, suppose, as those of a sermon, in a short time after they are heard, with wonderful exactness and readiness; but then the whole is obliterated, after a longer time, much more completely

than in persons of common memories and judgments. One may perhaps conjecture, that the brain receives all dispositions to vibrate sooner in these persons, and lets them go sooner, than in others. And the last may contribute to the first: for, new impressions may take place more deeply and precisely, if there be few old ones to oppose them. The most perfect memory is that which can both receive most readily, and retain most durably. But we may suppose, that there are limits, beyond which these two different powers cannot consist with each other.

Tenthly, When a person desires to recollect a thing that has escaped him, suppose the name of a person, or visible object, he recalls the visible idea, or some other associate, again and again, by a voluntary power, the desire generally magnifying all the ideas and associations; and thus bringing in the association and idea wanted, at last. However, if the desire be great, it changes the state of the brain, and has an opposite effect; so that the desired idea does not recur, till all has subsided; perhaps not even then.

Eleventhly, All our voluntary powers are of the nature of memory; as may be easily seen from the foregoing account of it, compared with the account of the voluntary powers given in the first chapter. And it agrees remarkably with this, that, in morbid affections of the memory, the voluntary actions suffer a like change and imperfection.

Twelfthly, For the same reasons the whole powers of the soul may be referred to the memory, when taken in a large sense. Hence, though some persons may have strong memories with weak judgments, yet no man can have a strong judgment with a weak original power of retaining and remembering.

SECT. V.

OF IMAGINATION, REVERIES, AND DREAMS.

PROP. XCI.—*To examine how far the Phænomena of Imagination, Reveries, and Dreams, are agreeable to the foregoing Theory.*

THE recurrence of ideas, especially visible and audible ones, in a vivid manner, but without any regard to the order observed in past facts, is ascribed to the power of imagination or fancy. Now here we may observe, that every succeeding thought is the result either of some new impression, or of an association with the preceding. And this is the common opinion. It is impossible indeed to attend so minutely to the succession of our ideas, as to

distinguish and remember for a sufficient time the very impression or association which gave birth to each thought; but we can do this as far as it can be expected to be done, and in so great a variety of instances, that our argument for the prevalence of the foregoing principle of association in all instances, except those of new impressions, may be esteemed a complete induction.

A reverie differs from imagination only in that the person being more attentive to his own thoughts, and less disturbed by foreign objects, more of his ideas are deducible from association, and fewer from new impressions.

It is to be observed, however, that in all the cases of imagination and reverie, the thoughts depend, in part, upon the then state of body or mind. A pleasurable or painful state of the stomach or brain, joy or grief, will make all the thoughts warp their own way, little or much. But this exception is as agreeable to the foregoing theory, as the general prevalence of association just laid down.

We come next to dreams. I say then, that dreams are nothing but the imaginations, fancies, or reveries of a sleeping man; and that they are deducible from the three following causes; *viz.* First, The impressions and ideas lately received, and particularly those of the preceding day. Secondly, The state of the body, particularly of the stomach and brain. And, thirdly, Association.

That dreams are, in part, deducible from the impression and ideas of the preceding day, appears from the frequent recurrence of these in greater or lesser clusters, and especially of the visible ones, in our dreams. We sometimes take in ideas of longer date, in part, on account of their recency: however, in general, ideas that have not affected the mind for some days, recur in dreams only from the second or third cause here assigned.

That the state of the body affects our dreams, is evident from the dreams of sick persons, and of those who labour under indigestions, spasms, and flatulencies.

Lastly, We may perceive ourselves to be carried on from one thing to another in our dreams partly by association.

It is also highly agreeable to the foregoing theory to expect, that each of the three foregoing causes should have an influence upon the trains of ideas that are presented in dreams.

Let us now see how we can solve the most usual phænomena of dreams upon these principles.

First, then, The scenes which present themselves are taken to be real. We do not consider them as the work of the fancy; but suppose ourselves present, and actually seeing and hearing what passes. Now this happens, First, Because we have no other reality to oppose to the ideas which offer themselves, whereas in the common fictions of the fancy, while we are awake, there is always a set of real external objects striking some of our senses, and precluding a like mistake there: or, if we become quite inattentive to external objects, the reverie does so far put

on the nature of a dream, as to appear a reality. Secondly, The trains of visible ideas, which occur in dreams, are far more vivid than common visible ideas; and therefore may the more easily be taken for actual impressions. For what reasons these ideas should be so much more vivid, I cannot presume to say. I guess, that the exclusion of real impressions has some share, and the increased heat of the brain may have some likewise. The fact is most observable in the first approaches of sleep; all the visible ideas beginning then to be more than usually glaring.

Secondly, There is a great wildness and inconsistency in our dreams. For the brain, during sleep, is in a state so different from that in which the usual associations were formed, that they can by no means take place as they do during vigilance. On the contrary, the state of the body suggests such ideas, amongst those that have been lately impressed, as are most suitable to the various kinds and degrees of pleasant and painful vibrations excited in the stomach, brain, or some other part. Thus a person who has taken opium, sees either gay scenes, or ghastly ones, according as the opium excites pleasant or painful vibrations in the stomach. Hence it will follow, that ideas will rise successively in dreams, which have no such connexion as takes place in nature, in actual impressions, nor any such as is deducible from association. And yet, if they rise up quick and vividly one after another, as subjects, predicates, and other associates use to do, they will be affirmed of each other, and appear to hang together. Thus the same person appears in two places at the same time; two persons appearing successively in the same place coalesce into one; a brute is supposed to speak (when the idea of voice comes from that quarter), or to handle; any idea, qualification, office, &c. coinciding in the instant of time with the idea of one's self, or of another person, adheres immediately, &c. &c.

Thirdly, We do not take notice of, or are offended at, these inconsistencies; but pass on from one to another. For the associations, which should lead us thus to take notice, and be offended, are, as it were, asleep; the bodily causes also hurrying us on to new and new trains successively. But if the bodily state be such as favours ideas of anxiety and perplexity, then the inconsistency and apparent impossibility, occurring in dreams, are apt to give great disturbance and uneasiness. It is to be observed likewise, that we forget the several parts of our dreams very fast in passing from one to another; and that this lessens the apparent inconsistencies, and their influences.

Fourthly, It is common in dreams for persons to appear to themselves to be transferred from one place to another, by a kind of sailing or flying motion. This arises from the change of the apparent magnitude and position of the images excited in the brain, this change being such as a change of distance and position in ourselves would have occasioned. Whatever the reasons be,

for which visible images are excited in sleep, like to the objects with which we converse when awake, the same reasons will hold for changes of apparent magnitude and position also; and these changes in fixed objects, being constantly associated with motions in ourselves when awake, will infer these motions when asleep. But then we cannot have the idea of the *vis inertiae* of our own bodies, answering to the impressions in walking; because the nerves of the muscles either do not admit of such miniature vibrations in sleep; or do not transmit ideas to the mind in consequence thereof; whence we appear to sail, fly, or ride. Yet sometimes a person seems to walk, and even to strike, just as in other cases he seems to feel the impression of a foreign body on his skin.

Those who walk and talk in their sleep, have evidently the nerves of the muscles concerned so free, as that vibrations can descend from the internal parts of the brain, the peculiar residence of ideas, into them. At the same time the brain itself is so oppressed, that they have scarce any memory. Persons who read inattentively, *i. e.* see and speak almost without remembering, also those who labour under such a morbid loss of memory, as that though they see, hear, speak, and act, *pro re nata*, from moment to moment, yet they forget all immediately, somewhat resemble the persons who walk and talk in sleep.

Fifthly, Dreams consist chiefly of visible imagery. This agrees remarkably with the perpetual impressions made upon the optic nerves and corresponding parts of the brain during vigilance, and with the distinctness and vividness of the images impressed.

We may observe also, that the visible imagery in dreams is composed, in a considerable degree, of fragments of visible appearances lately impressed. For the disposition to these vibrations must be greater than to others, *cæteris paribus*, at the same time that by the imperfection and interruption of the associations, only fragments, not whole images, will generally appear. The fragments are so small, and so intermixed with other fragments and appearances, that it is difficult to trace them up to the preceding day; the shortness of our memory contributing also not a little thereto.

It happens in dreams, that the same fictitious places are presented again and again at the distance of weeks and months, perhaps during the whole course of life. These places are, I suppose, compounded at first, probably early in youth, of fragments of real places, which we have seen. They afterwards recur in dreams, because the same state of brain recurs; and when this has happened for some successions, they may be expected to recur at intervals during life. But they may also admit of variations, especially before frequent recurrency has established and fixed them.

Sixthly, It has been observed already, that many of the things which are presented in dreams, appear to be remembered by us,

or, at least, as familiar to us; and that this may be solved by the readiness with which they start up, and succeed one another, in the fancy.

Seventhly, It has also been remarked, that dreams ought to be soon forgotten, as they are in fact; because the state of the brain suffers great changes in passing from sleep to vigilance. The wildness and inconsistency of our dreams render them still more liable to be forgotten. It is said that a man may remember his dreams best by continuing in the same posture in which he dreamt; which, if true, would be a remarkable confirmation of the doctrine of vibrations; since those which take place in the medullary substance of the brain would be least disturbed and obliterated by this means.

Eighthly, the dreams which are presented in the first part of the night are, for the most part, much more confused, irregular, and difficult to be remembered, than those which we dream towards the morning; and these last are often rational to a considerable degree, and regulated according to the usual course of our associations. For the brain begins then to approach to the state of vigilance, or that in which the usual associations were formed and cemented. However, association has some power even in wild and inconsistent dreams.

COR. I. As the prophecies were, many of them, communicated in the way of divine visions, trances, or dreams, so they bear many of the foregoing marks of dreams. Thus they deal chiefly in visible imagery; they abound with apparent impossibilities, and deviations from common life, of which yet the prophets take not the least notice: they speak of new things as of familiar ones: they are carried in the spirit from place to place; things requiring a long series of time in real life are transacted in the prophetic visions as soon as seen; they ascribe to themselves and others new names, offices, &c.; every thing has a real existence conferred upon it; there are singular combinations of fragments of visible appearances; and God himself is represented in a visible shape, which of all other things must be most offensive to a pious Jew. And it seems to me that these and such like criterions might establish the genuineness of the prophecies, exclusively of all other evidences.

COR. II. The wildness of our dreams seems to be of singular use to us, by interrupting and breaking the course of our associations. For, if we were always awake, some accidental associations would be so much cemented by continuance, as that nothing could afterwards disjoin them; which would be madness.

COR. III. A person may form a judgment of the state of his bodily health, and of his temperance, by the general pleasantness or unpleasantness of his dreams. There are also many useful hints relating to the strength of our passions deducible from them.

SECT. VI.

IMPERFECTIONS IN THE RATIONAL FACULTY.

PROP. XCII.—*To examine how far Deviations from sound Reason, and Alienations of Mind, are agreeable to the foregoing Theory.*

MAD persons differ from others, in that they judge wrong of past or future facts of a common nature; that their affections and actions are violent and different from, or even opposite to, those of others upon the like occasions, and such as are contrary to their true happiness; that their memory is fallacious, and their discourse incoherent; and that they lose, in great measure, that consciousness which accompanies our thoughts and actions, and by which we connect ourselves with ourselves from time to time. These circumstances are variously combined in the various kinds and degrees of madness; and some of them take place in persons of sound minds, in certain degrees, and for certain spaces of time: so that here, as in other cases, it is impossible to fix precise limits, and to determine where soundness of mind ends, and madness begins. I will make some short remarks, deduced from the theory of these papers upon the following states of mind, which all bear some relation to one another, and all differ from the perfection of reasoning natural to adults, according to the ordinary course of things, *viz.*

1. The erroneousness of the judgment in children and idiots.
2. The dotage of old persons.
3. Drunkenness.
4. The deliriums attending acute or other distempers.
5. The frequent recurrency of the same ideas in a course of study or otherwise.
6. Violent passions.
7. Melancholy.
8. Madness.

THE ERRONEOUSNESS OF THE JUDGMENT IN CHILDREN
AND IDIOTS.

Children often misrepresent past and future facts; their memory is fallacious; their discourse incoherent; their affections and actions disproportionate to the value of the things desired and pursued; and the connecting consciousness is in them as yet imperfect. But all this follows naturally from the observations made above concerning the methods in which we learn to remember and relate past facts, to judge of future ones, to reason, and to express ourselves suitably to each occasion; also in which our hopes and

fears are made to depend upon symbols. No particular account is therefore required for these phænomena; they are strictly natural; and many of the chief reasons for the imperfection of the memory and judgment in children occurring perpetually, and being very obvious, it is not usually supposed, that any particular account is required. However, if an adult should become subject to a like erroneousness, it would evidently be one species of madness; as fatuity or idiotism is. Here the brain labours under such an original disorder, as either not to receive a disposition to the miniature vibrations in which ideas consist, and whence voluntary motions are derived, but with great difficulty; or if it receive such dispositions readily, they have not the usual permanency; in both which cases it is evident, that the memory, with all the faculties thereon depending, must continue in an imperfect state, such as is observed in idiots. The want of the connecting consciousness in children and idiots, and indeed in maniacs of various kinds, excites our pity in a peculiar manner, this connecting consciousness being esteemed a principal source and requisite of happiness. Their helplessness, and the dangers to which they are exposed without foreseeing them, contribute also to enhance our compassion.

OF DOTAGE.

The dotage of old persons is oftentimes something more than a mere decay of memory. For they mistake things present for others, and their discourse is often foreign to the objects that are presented to them. However, the imperfection of their memory in respect of impressions but just made, or at short intervals of past time, is one principal source of their mistakes. One may suppose here that the parts of the brain in which the miniature vibrations belonging to ideas have taken place, are decayed in a peculiar manner, perhaps from too great use, while the parts appropriated to the natural, vital, and animal motions remain tolerably perfect. The sinuses of the brain are probably considerably distended in these cases, and the brain itself in a languishing state; for there seems to be a considerable resemblance between the inconsistencies of some kinds of dotage, and those of dreams. Besides which it may be observed, that in dotage the person is often sluggish and lethargic; and that as a defect of the nutritive faculty in the brain will permit the sinuses to be more easily distended, so a distention of the sinuses, from this or any other cause, may impede the due nutrition of the brain. We see that, in old persons, all the parts, even the bones themselves, waste and grow less. Why may not this happen to the brain, the origin of all, and arise from an obstruction of the infinitesimal vessels of the nervous system, this obstruction causing such a degree of opacity, as greatly to abate, or even to destroy, the powers of association and memory? At the same time vibrations,

foreign to the present objects, may be excited from causes residing in the brain, stomach, &c. just as in sleep.

OF DRUNKENNESS.

The common and immediate effect of wine is to dispose to joy, *i. e.* to introduce such kinds and degrees of vibrations into the whole nervous system, or into the separate parts thereof, as are attended with a moderate continued pleasure. This it seems to do chiefly by impressing agreeable sensations upon the stomach and bowels, which are thence propagated into the brain, continue there, and also call up the several associated pleasures that have been formed from pleasant impressions made upon the alimentary duct, or even upon any of the external senses. But wine has also probably a considerable effect of the same kind, after it is absorbed by the veins and lacteals, *viz.* by the impressions which it makes on the solids, considered as productions of the nerves, while it circulates with the fluids in an unassimilated state, in the same manner, as has been already observed of opium; which resembles wine in this respect also, that it produces one species of temporary madness. And we may suppose, that analogous observations hold with regard to all the medicinal and poisonous bodies, which are found to produce considerable disorders in the mind; their greatest and most immediate effect arises from the impressions made on the stomach, and the disorderly vibrations propagated thence into the brain; and yet it seems probable, that such particles as are absorbed, produce a similar effect in circulating with the blood.

Wine, after it is absorbed, must rarefy the blood, and consequently distend the veins and sinuses, so as to make them compress the medullary substance, and the nerves themselves, both in their origin and progress; it must therefore dispose to some degree of a palsy of the sensations and motions; to which there will be a farther disposition from the great exhaustion of the nervous capillaments, and medullary substance, which a continued state of gaiety and mirth, with the various expressions of it, has occasioned.

It is moreover to be noted, that the pleasant vibrations producing this gaiety by rising higher and higher perpetually, as more wine is taken into the stomach and blood-vessels, come at last to border upon, and even to pass into, the disagreeable vibrations belonging to the passions of anger, jealousy, envy, &c. more especially if any of the mental causes of these be presented at the same time.

Now it seems, that, from a comparison of these and such like things with each other, and with what is delivered in other parts of these papers, the peculiar temporary madness of drunken persons might receive a general explanation. Particularly it seems natural to expect that they should at first be much dis-

posed to mirth and laughter, with a mixture of small inconsistencies and absurdities; that these last should increase from the vivid trains which force themselves upon the brain, in opposition to the present reality; that they should lose the command and stability of the voluntary motions from the prevalence of confused vibrations in the brain, so that those appropriated to voluntary motion cannot descend regularly as usual; but that they should stagger, and see double: that quarrels and contentions should arise after some time; and all end at last in a temporary apoplexy. And it is very observable, that the free use of fermented liquors disposes to passionateness, to distempers of the head, to melancholy, and to downright madness; all which things have also great connexions with each other.

The sickness and head-ache which drunkenness occasions the succeeding morning, seem to arise, the first from the immediate impressions made on the nerves of the stomach; the second from the peculiar sympathy which the parts of the head, external as well as internal, have with the brain, the part principally affected in drunkenness, by deriving their nerves immediately from it.

OF DELIRIUMS.

I come next to consider the deliriums which sometimes attend distempers, especially acute ones. In these a disagreeable state is introduced into the nervous system by the bodily disorder, which checks the rise of pleasant associations, and gives force and quickness to disgustful ones; and which consequently would of itself alone, if sufficient in degree, vitiate and distort all the reasonings of the sick person. But besides this, it seems, that, in the deliriums attending distempers, a vivid train of visible images forces itself upon the patient's eye, and that either from a disorder in the nerves and blood-vessels of the eye itself, or from one in the brain, or one in the alimentary duct, or which is most probable, from a concurrence of all these. It seems also that the wild discourse of delirious persons is accommodated to this train in some imperfect manner; and that it becomes so wild, partly from the incoherence of the parts of this train, partly from its not expressing even this incoherent train adequately, but deviating into such phrases as the vibrations excited by the distemper in the parts of the brain corresponding to the auditory nerves, or in parts still more internal, and consequently the seats of ideas purely intellectual, produce by their associated influence over the organs of speech.

That delirious persons have such trains forced upon the eye from internal causes, appears probable from hence, that when they first begin to be delirious, and talk wildly, it is generally at such times only as they are in the dark, so as to have all visible objects excluded; for, upon bringing a candle to them, and presenting common objects, they recover themselves, and talk

rationally, till the candle be removed again. For hence we may conclude, that the real objects overpower the visible train from internal causes, while the delirium is in its infancy; and that the patient relapses, as soon as he is shut up in the dark, because the visible train from internal causes overpowers that which would rise up, was the person's nervous system in a natural state, according to the usual course of association, and the recurrent recollection of the place and circumstances in which he is situated. By degrees the visible train, from internal causes, grows so vivid, by the increase of the distemper, as even to overpower the impressions from real objects, at least frequently, and in a great degree, and so as to intermix itself with them, and to make an inconsistency in the words and actions; and thus the patient becomes quite delirious.

Persons inclining to be delirious in distempers are most apt to be so in going to sleep, and in waking from sleep; in which circumstances the visible trains are more vivid, than when we are quite awake, as has been observed above.

It casts also some light upon this subject, that tea and coffee will sometimes occasion such trains; and that they arise in our first attempts to sleep after these liquors.

As death approaches, the deliriums attending distempers abound with far more incoherencies and inconsistencies, than any other species of alienations of the mind; which may easily be conceived to be the natural result of the entire confusion and disorder which then take place in the nervous system. However, there are some cases of death, where the nervous system continues free from this confusion to the last, as far as the by-standers can judge.

THE FREQUENT RECURRENCY OF THE SAME IDEAS.

When a person applies himself to any particular study, so as to fix his attention deeply on the ideas and terms belonging to it, and to be very little conversant in those of other branches of knowledge, it is commonly observed, that he becomes narrow-minded, strongly persuaded of the truth and value of many things in his own particular study, which others think doubtful or false, or of little importance, and after some time subject to low spirits, and the hypochondriacal distemper. Now all this follows from observations already made. The perpetual recurrency of particular ideas and terms makes the vibrations belonging thereto become more than ordinarily vivid, converts feeble associations into strong ones, and enhances the secondary ideas of dignity and esteem, which adhere to them, at the same time that all these things are diminished in respect of other ideas and terms that are kept out of view; and which, if they were to recur in due proportion, would oppose and correct many associations in the particular study, which are made not according to

the reality of things, and keep down our exorbitant opinions of its importance. The same perpetual recurrency of vibrations, affecting one and the same part of the brain, in nearly one and the same manner, must irritate it at last, so as to enter the limits of pain, and approach to the states peculiar to fear, anxiety, despondency, peevishness, jealousy, and the rest of the tribe of hypochondriacal passions.

Sleep, which presents ideas at hazard, as one may say, and with little regard to prior associations, seems to be of the greatest use in keeping off the hypochondriacal distemper in such persons: however, without a change of studies, this, with great narrow-mindedness, will probably come at last.

It follows from the same method of reasoning, that since the concerns of religion are infinite, so that we can never over-rate them, we ought to make the ideas, motives, and affections, of this kind, recur as often as possible. And if this be done in a truly catholic spirit, with all that variety of actions which our duty to God, our neighbour, and ourselves, requires, there will be no danger of introducing either narrow-mindedness or hypochondriacism. And it ought to be esteemed the same kind and degree of alienation of mind to undervalue a thing of great importance, as to over-value one of small.

OF VIOLENT PASSIONS.

Persons that are under the influence of strong passions, such as anger, fear, ambition, disappointment, have the vibrations attending the principal ideas so much increased, that these ideas cling together, *i. e.* are associated in an unnatural manner; at the same time that the eagerness and violence of the passion prevent the formation of such associations, or obscure them, if already formed, as are requisite for the right apprehension of the past and future facts, which are the objects of this passion. Violent passions must therefore disorder the understanding and judgment, while they last; and if the same passion return frequently, it may have so great an effect upon the associations, as that the intervention of foreign ideas shall not be able to set things to rights, and break the unnatural bond. The same increase of vibrations makes all the principal ideas appear to affect *self*, with the peculiar interesting concerns supposed to flow from personal identity; so that these vibrations exert a reflected influence upon themselves by these means. And thus it appears, that all violent passions must be temporary madnesses, and all habits of them permanent ones, agreeably to the judgment of the wise and good in these things. It appears also, that violent fits of passion, and frequent recurrences of them, must, from the nature of the body, often transport persons, so that they shall not be able to recover themselves, but fall within the limits of the distemper called madness emphatically.

OF MELANCHOLY.

The next species of alienations of the mind is melancholy. Vapours, hypochondriacal, and hysterical disorders, are comprehended under this class. The causes of it are self-indulgence in eating and drinking, and particularly in fermented liquors, want of due bodily labour, injuries done to the brain by fevers, concussions, &c., too much application of the mind, especially to the same objects and ideas, violent and long-continued passions, profuse evacuations, and an hereditary disposition; which last we may suppose to consist chiefly in an undue make of the brain.

In women the uneasy states of the *uterus* are propagated to the brain, both immediately and mediately, *i. e.* by first affecting the stomach, and thence the brain. In men the original disorder often begins, and continues for a long time, chiefly in the organs of digestion.

The *causa proxima* of melancholy is an irritability of the medullary substance of the brain, disposing it upon slight occasions to such vibrations as enter the limits of pain; and particularly to such kinds and degrees, as belong to the uneasy passions of fear, sorrow, anger, jealousy, &c. And as these vibrations, when the passions are not in great excess, do not much transgress the limits of pleasure, it will often happen that hypochondriac and hysteric persons shall be apt to be transported with joy from trifling causes, and be, at times, disposed to mirth and laughter. They are also very fickle and changeable, as having their desires, hopes, and fears, increased far beyond their natural magnitude, when they happen to fall in with such a state of brain as favours them.

It often happens to these persons to have very absurd desires, hopes, and fears; and yet, at the same time, to know them to be absurd; and, in consequence thereof, to resist them. While they do this, we may reckon the distemper within the bounds of melancholy; but when they endeavour to gratify very absurd desires, or are permanently persuaded of the reality of very groundless hopes and fears, and especially if they lose the connecting consciousness in any great degree, and violate the rules of decency and virtue (the associations of this kind being overpowered, as it were, in the same manner as they are sometimes in dreams), we may reckon the distemper to have passed into madness, strictly so called; of which I now come to speak in a general brief way.

OF MADNESS.

The causes of madness are of two kinds, bodily and mental. That which arises from bodily causes is nearly related to drunk-

eness, and to the deliriums attending distempers. That from mental causes is of the same kind with temporary alienations of the mind during violent passions, and with the prejudices and opinionativeness, which much application to one set of ideas only occasions.

We may thus distinguish the causes for the more easy conception and analysis of the subject; but, in fact, they are both united for the most part. The bodily cause lays hold of that passion or affection, which is most disproportionate; and the mental cause, when that is primary, generally waits till some bodily distemper gives it full scope to exert itself. Agreeably to this, the prevention and cure of all kinds of madness require an attention both to the body and mind; which coincides in a particular manner with the general doctrine of these papers.

It is observed, that mad persons often speak rationally and consistently upon the subjects that occur, provided that single one which most affects them, be kept out of view. And the reason of this may be, that whether they first became mad, because a particular, original, mental uneasiness falls in with an accidental bodily disorder; or because an original, bodily disorder falls in with an accidental mental one; it must follow, that a particular set of ideas shall be extremely magnified, and, consequently, an unnatural association of sameness or repugnancy between them generated, all other ideas and associations remaining nearly the same. Thus, suppose a person, whose nervous system is disordered, to turn his thoughts accidentally to some barely possible good or evil. If the nervous disorder falls in with this, it increases the vibrations belonging to its ideas so much, as to give it a reality, a connexion with *self*. For we distinguish the recollection and anticipation of things relating to ourselves, from those of things relating to other persons, chiefly by the difference of strength in the vibrations, and in their coalescences with each other. When one false position of this kind is admitted, it begets more of course; the same bodily and mental causes also continuing; but then this process stops after a certain number of false positions are adopted from their mutual inconsistency (unless the whole nervous system be deranged); and it is often confined to a certain kind, as the irascible, the terrifying, &c.

The memory is often much impaired in madness, which is both a sign of the greatness of the bodily disorder, and a hindrance to mental rectification; and therefore a bad prognostic. If an opposite state of body and mind can be introduced early, before the unnatural associations are too much cemented, the madness is cured; if otherwise, it will remain, though both the bodily and mental cause should be at last removed.

Inquiries after the philosopher's stone, the longitude, &c. to which men are prompted by strong, ambitious, or covetous desires, are often both cause and effect, in respect of madness.

Excessive fits of anger and fear are also found often to hurry persons into madness.

In dissections after madness the brain is often found dry, and the blood-vessels much distended; which are arguments, that violent vibrations took place in the internal parts of the brain, the peculiar residence of ideas and passions; and that it was much compressed, so as to obstruct the natural course of association.

As in mad persons the vibrations in the internal parts of the brain are preternaturally increased, so they are defective in the external organs, in the glands, &c. Hence maniacs eat little, are costive, make little water, and take scarce any notice of external impressions. The violence of the ideas and passions may give them great muscular strength upon particular occasions, when the violent vibrations descend from the internal parts of the brain into the muscles, according to former associations of these with the voluntary motions (the same increase of vibrations in the internal parts of the brain, which hinders the ascending vibrations of sensation, augmenting the descending ones of motion). But maniacs are often very sluggish, as well as insensible, from the great prevalence of the ideal vibrations; just as persons in a state of deep attention are. An accurate history of the several kinds of madness from those physicians, who are much conversant with this distemper, is greatly wanted, and it would probably receive considerable light from this theory.

Religious considerations are the best preservative in hereditary or other tendencies to madness; as being the only sure means of restraining violent passions, at the same time that they afford a constant indefinite hope, mixed with a filial awe and fear; which things are eminently qualified to keep up a steadiness and sobriety of mind, and to incite us to such a course of action, as adds incessantly to the hope, and diminishes the fear. However, bodily labour, with a variety of mental occupations, and a considerable abstemiousness in the quantity and quality of diet, ought always to be joined.

SECT. VII.

THE INTELLECTUAL FACULTIES OF BRUTES.

PROP. XCIII.—*To examine how far the Inferiority of Brutes to Mankind in intellectual Capacities is agreeable to the foregoing Theory.*

IF the doctrines of vibrations and association be found sufficient to solve the phænomena of sensation, motion, ideas, and

affections, in men; it will be reasonable to suppose, that they will also be sufficient to solve the analogous phænomena in brutes. And, conversely, it seems probable, that an endeavour to apply and adapt these doctrines to brutes will cast some light and evidence upon them, as they take place in men. And thus the laws of vibrations and association may be as universal in respect of the nervous systems of animals of all kinds, as the law of circulation is with respect to the system of the heart and blood-vessels; and their powers of sensation and motion be the result of these three laws, *viz.* circulation, vibrations, and association, taken together. These three laws may also be most closely united in their ultimate cause and source, and flow in all their varieties from very simple principles. At least this is the tenor of nature in many similar cases.

As the whole brute creation differs much from, and is far inferior to man in intellectual capacities; so the several kinds of animals differ much from each other in the same respect. But I shall, in this Section, confine myself chiefly to the consideration of the first difference, *viz.* of that between mankind and the brute creation in general; and endeavour to assign such reasons for it, as flow from, or are agreeable to, the theory of these papers. We may suppose then, that brutes in general differ from, and are inferior to man, in intellectual capacities, on the following accounts:

First, The small proportional size of their brains.

Secondly, The imperfection of the matter of their brains, whereby it is less fitted for retaining a large number of miniatures, and combining them by association, than man's.

Thirdly, Their want of words, and such like symbols.

Fourthly, The instinctive powers which they bring into the world with them, or which rise up from internal causes, as they advance towards adult age.

Fifthly, The difference between the external impressions made on the brute creation, and on mankind.

First, then, As the brains of brutes are less in proportion to the bulk of the other parts, than those of men; and as the internal parts of the brain appear from these papers to be the peculiar seat of ideas, and intellectual affections; it seems very natural to expect, that brutes should have a far less variety of these than men. The parts which intervene between the optic and auditory nerves, being proportionably less, for instance, in brutes, will not admit of so great a variety of associations between the several ideas of these senses, because the optic and auditory nerves cannot have so great a variety of connexions and communications with each other.

To this it is to be added, that the internal parts belonging to the olfactory nerves, and, perhaps, those belonging to the nerves of taste, take up, probably, a greater proportional part of the medullary substance of the brain than in us, since most brutes

have the sense of smell, and perhaps that of taste in greater perfection than we have. There will therefore be still less room left for the variety of intercourses between the optic and auditory nerves in the medullary substance of the brain. And yet it is evident, from obvious observations, as well as from the whole tenor of these papers, that the eye and ear, with their associations, are the chief sources of intellect; and that the greatest part of the pleasures and pains of human life arise from visible and audible impressions, which in themselves afford neither pleasure nor pain.

Thus it is natural to expect, that the happiness and misery of brutes should depend principally, and in a direct manner, on the impressions made upon their gross senses, whilst that of mankind arises, in great measure, from long trains of associated ideas and emotions, which enter chiefly by the eye and ear. And it seems to me a very striking coincidence, that mankind should at the same time exceed the brute creation in the variety of their ideas, and in the proportional largeness of that part of the body which is the peculiar seat of these.

The same proportional largeness may, as it were, detain the vibrations which ascend from external impressions up to the brain, and so prevent that freedom of descent into the muscular system which takes place in brutes; and which disposes them to move more early, and more readily, in consequence of direct impressions, than men, at the same time that they have a far less command, in respect of voluntary motion. But this difference depends, in great measure, upon the considerations that follow, as will be seen.

Secondly, That the very constitution and texture of the nervous system, in its infinitesimal vessels, should differ in brutes from that of men, appears highly reasonable to be expected. And since the lives of brutes fall, in general, far short of that of man, also since the quadrupeds (which resemble man more than other animals) are far more hairy, and fowls have feathers, it appears probable, that the texture of the nervous system in brutes should tend more to callosity, and fixedness, in its dispositions to vibrate, than in men. The brains of young brute animals will therefore be sooner able to retain miniatures than those of children, as tending more to firmness and fixedness in their ultimate texture and constitution; at the same time that this texture will unfit them for receiving a variety. To which, if we add the shortness of their lives, and consequently of their ascent to the summit of adult age; which ascent is the proper time for receiving instruction; it is easy to see, that on this double account, as well as that mentioned under the foregoing head, they must fall far short of mankind in the number of their intellectual ideas, pleasures, and pains.

It follows from the same method of reasoning, that the few dispositions to miniature vibrations, which are generated in

brutes, may be as perfect in their kinds; and consequently the memory, and short direct ratiocination depending thereon, as perfect also as the analogous things in man. Nay, they may be more so, if the particular animal under consideration excel man in the acuteness and precision of those senses, whose ideas make a principal part of this ratiocination. Now it appears, that most quadrupeds exceed us in the acuteness of the smell, and in the power of distinguishing a variety of smells. And many birds seem to be able to see distinctly at much greater distances. However, our auditory nerves, and the regions of the brain corresponding thereto, appear far better fitted for retaining a variety of miniatures of articulate sounds; and our optic nerves, and the regions of the brain corresponding thereto, for retaining a variety of miniatures of shapes and colours. And next to man, quadrupeds, and particularly monkies, dogs, and horses, seem to have these regions of the brain in the greatest perfection.

If the texture of the brains of animals here considered be also, in part, the cause of their being covered with hair, wool, bristles, feathers, &c. it may, from this its effect, dispose them to greater strength and expertness in their motions, and that more early, than happens to men. For all these are *electrics per se*, and consequently may first have a considerable degree of this power communicated to them by the heat of the circulating blood; and then, not being able to transmit it to the air, which is also an *electric per se*, may reflect it upon the muscles, and thereby dispose them to somewhat greater activity. It is well known, that the manes of horses, and backs of cats, are made electric by their vital powers. It may farther be observed, that the hoofs of animals are *electrics per se*, and that the feathers of water-fowl repel the water; whence the electric virtue may be kept from running off to the earth and water respectively. However, we ought not to lay much stress upon this electric virtue in the muscular fibres of brutes (if there be any such virtue) in order to account for the superior and more early powers of animals, in respect of ordinary motions. The texture of the fibres of the muscles, and that of the brain, must have the principal share in this effect.

It is also to be considered, that as they have far fewer voluntary motions, on account of having far fewer ideas, so they may arrive at a greater perfection in the automatic ones, and the small number of voluntary ones which they do perform, on this account. Man is distracted, as it were, by the endless variety of his ideas, and voluntary motions: and it is notorious, that none besides extraordinary geniuses arrive at perfection in any considerable variety; whereas a person of small natural capacity, by selecting some one branch of science, or manual art, and applying himself to this alone, may perform wonders. Nay, there have been instances of persons not much removed from idiotism, who could perform the arithmetical operations by

memory, far better than men of good understandings, well versed in those operations; which is a thing somewhat analogous to the extraordinary sagacity in investigating and concluding, which brutes discover, in respect of some particular things.

Thirdly, The next circumstance which renders brutes far inferior to man in intellectual acquisitions, is their want of symbols, such as words, whereby to denote objects, sensations, ideas, and combinations of ideas. This may appear from several considerations. Those men who happen to be born in a country where the mother tongue is copious and precise, who apply themselves to the study of their mother tongue, who, besides this, learn one or more foreign tongues, &c. get, by these means, a considerable share of the knowledge of things themselves, learn to remark, prove, disprove, and invent, and, *cæteris paribus*, make a quicker progress in mental accomplishments than others. On the contrary, the mental improvement of persons born deaf is extremely retarded by their incapacity of having things suggested by articulate sounds, or the pictures of these, and also by their not being able to solve the inverse problem, and denote their own trains of thought by adequate symbols. Words are the same kind of helps in the investigation of qualities, as algebraical symbols and methods are in respect of quantity, as has been already remarked. Persons born deaf cannot therefore make any great progress in the knowledge of causes and effects, in abstracted and philosophical matters; but must approach, as it were, to the state of the brute creation. On the contrary, brute creatures, that have much intercourse with mankind, such as dogs and horses, by learning the use of words and symbols of other kinds, become more sagacious than they would otherwise be. And if particular pains be taken with them, their docility and sagacity, by means of symbols, sometimes arise to a very surprising degree.

Parrots might be thought, according to this view of the present subject, to have some particular advantages over quadrupeds, by their being able to pronounce words; since, as has been observed before, the attempts which children make to apply words to things, assist them very much in understanding the applications made by others. But parrots do not seem to speak from any particular acuteness and precision in the auditory nerves, and parts of the brain corresponding thereto, having no cochlea, but from the perfection and pliability of their vocal organs, in which they exceed other birds; as birds in general do beasts. And it is reasonable to think, that quadrupeds, which resemble man so nearly in the make of the organ of hearing, as well as in other parts, and which also have naturally much more intercourse with man (being fellow-inhabitants of the earth) than birds (which inhabit the air), should likewise have a greater faculty of distinguishing the articulate sounds of man's voice, retaining their miniatures, and applying them to the things

signified, than birds; which seems evidently to be the case. Sagacious quadrupeds may therefore be said to resemble dumb persons arrived at adult age, who are possessed of much knowledge, which yet they cannot express, except by gestures, by dumb show: whereas parrots, as before remarked, resemble children; these having many words with very little knowledge annexed to them.

Apes and monkeys, of the several kinds, seem to approach nearest to man, in the general faculty of reasoning, and drawing conclusions; but in particular things, especially where instinct prevails, some other brutes far exceed them; as indeed such brutes do man himself in a few, on account of the peculiar acuteness of the sense of smell, and the same instinct.

I reckon the want of articulate sounds to be one of the reasons why brutes are so much inferior to men in intellectual capacities; because it appears, from the foregoing and other considerations of the same kind, that it is so. But this is no imperfection upon the whole. The proportional smallness of their brains, the texture of these, their instincts, and their external circumstances, are such, that they do not want language much; that they could make no great use of it, had they proper organs for speaking; and that they would probably be losers, upon the whole, by having it. The efficient and final causes are here suited to each other, as in all other cases; so that no circumstance can be changed for the better, *cæteris manentibus*.

Fourthly, Let us come to the instinctive powers of animals. These are a point of a very difficult consideration. They are evidently not the result of external impressions, by means of the miniatures of these, their associations and combinations, in the manner according to which I have endeavoured to shew that the rational faculties of mankind are formed and improved; and yet, in the instances to which they extend, they very much resemble the rational faculties of mankind. Animals, in preparing and providing for themselves and their young, in future exigencies, proceed in the same manner as a person of good understanding, who foresaw the event, would do; and this, even though they be a little put out of their way. And in this they much resemble persons of narrow capacities and acquisitions, who yet excel greatly in some particular art or science; of which there are many instances. Such persons shew great ingenuity in the things to which they are accustomed, and in some others that border upon them within certain limits, so as to shew great ingenuity still, though put a little out of their way; but if they be put much out of their way, or questioned about things that are entirely foreign to the art or science in which they excel, they are quite lost and confounded.

Let us suppose this to be the case, and then the inquiry concerning instinct in brutes will be reduced to this; *viz.* by what means the nervous systems of brutes are made to put on dispo-

sitions to miniature vibrations, analogous to those which take place in the persons here considered; and which are in them the result of foregoing impressions, if we admit the theory of these papers. Now, to me, there seems no difficulty in ascribing this to the mere bodily make in brutes, so that miniature vibrations, such as answer in us to ideas, and voluntary motions, shall spring up in them at certain ages and seasons of the year, and mix themselves with impressions, and acquired ideas, so as to be, in general, suitable to them; and, in general, to direct the brute creatures in what manner to provide for, and preserve, themselves and their young.

This would be a kind of inspiration to brutes, mixing itself with, and helping out, that part of their faculties which corresponds to reason in us, and which is extremely imperfect in them. Only this inspiration might be called natural, as proceeding from the same stated laws of matter and motion as the other phænomena of nature; whereas the inspiration of the sacred writers appears to be of a much higher source, so as to be termed supernatural properly, in contradistinction to all knowledge resulting from the common laws of nature. And yet it may result from some higher laws of nature. For sacred inspiration would lose nothing of its authority, though it should appear to be within such laws, as by their fixedness might be termed nature: and, indeed, all differences in these things, after the facts are once settled, will be found, upon due inquiry, to be merely verbal.

Fifthly, The last cause here assigned for the great difference and inferiority of brutes, in respect of intellectual capacities, is the difference in the events and incidents of their lives. They converse with far fewer objects than men, and both the objects and pleasures of feeling, taste, and smell, have a far greater proportional share in the sum total, than in us. Now, as in men, the common events and incidents of life give a turn to the whole frame of mind, and either enlarge the intellectual capacities, if they be various, or narrow them, if the same occurrences return again and again perpetually; so, independently of all the foregoing considerations, the sameness, paucity, and relation to mere sense, of the impressions made on brutes, must infer a great narrowness of understanding.

From all these things put together, it appears very conceivable how the mental faculties of brutes should, consistently with the doctrines of vibrations and association, be what they are, in fact, found to be. And though I suppose, with Descartes, that all their motions are conducted by mere mechanism, yet I do not suppose them to be destitute of perception, but that they have this in a manner analogous to that which takes place in us; and that it is subjected to the same mechanical laws as the motions. Whether the ideal vibrations, which take place in the medullary substances of their brains, be the result of former impressions, or

the mere offspring of their vital and natural powers, agreeably to the foregoing hypothesis concerning instinct, or the compound effect of both, which we may presume to be generally the case, I always suppose, that corresponding feelings, and affections of mind, attend upon them, just as in us. And the brute creatures prove their near relation to us, not only by the general resemblance of the body, but by that of the mind also; inasmuch as many of them have most of the eminent passions in some imperfect degree, and as there is, perhaps, no passion belonging to human nature, which may not be found in some brute creature in a considerable degree.

The brutes seem scarce ever able to arrive at any proper self-interest of the abstract and refined kind, at consciousness, so as to compare and connect themselves with themselves in different situations, or at any idea and adoration of God; and this from the narrowness of their capacities and opportunities in general, but particularly from their want of symbols.

The same want of symbols must make all their reasonings and affections, which resemble ours in the general, be, however, considerably different in particulars, and far less complex; but it is sufficient to entitle them to the names of sagacity, cunning, fear, love, &c. by which ours are denoted, that the trains of ideal vibrations in their brains bear a general resemblance to the corresponding ones in ours, spring from like causes, and produce like effects.

The power of association over brutes is very evident in all the tricks which they are taught; and the whole nature of each brute, which has been brought up amongst others of the same species, is a compound of instinct, his own observation and experience, and imitation of those of his own species. Instinct seems to have exerted its whole influence when the creature is arrived at maturity, and has brought up young; so that nothing new can be expected from it afterwards. But their intellectual acquisitions from observation and imitation continue; whence old brutes are far more cunning, and can act far better, *pro re nata*, than young ones.

It ought always to be remembered in speaking on this subject, that brutes have more reason than they can shew, from their want of words, from our inattention, and from our ignorance of the import of those symbols, which they do use in giving intimations to one another, and to us.

We seem to be in the place of God to them, to be his vicegerents, and empowered to receive homage from them in his name. And we are obliged, by the same tenure, to be their guardians and benefactors.

CHAP. IV.

THE SIX CLASSES OF INTELLECTUAL PLEASURES AND PAINS.

I HAVE now dispatched the history and analysis of the sensations, motions, and ideas; and endeavoured to suit them, as well as I could, to the principles laid down in the first chapter. My next business is, to inquire particularly into the rise and gradual increase of the pleasures and pains of imagination, ambition, self-interest, sympathy, theopathy, and the moral sense; and to see how far these can be deduced, in the particular forms and degrees that are found to prevail, in fact, from the sensible pleasures and pains, by means of the general law of association. As to that of vibrations, it seems of little importance in this part of the work, whether it be adopted or not. If any other law can be made the foundation of association, or consistent with it, it may also be made consistent with the analysis of the intellectual pleasures and pains, which I shall here give. I do not think there is any other law that can; on the contrary, there seems to be so peculiar an aptness in the doctrine of vibrations, for explaining many of the phænomena of the passions, as almost excludes all others.

Now it will be a sufficient proof, that all the intellectual pleasures and pains are deducible ultimately from the sensible ones, if we can shew of each intellectual pleasure and pain in particular, that it takes its rise from other pleasures and pains, either sensible or intellectual. For thus none of the intellectual pleasures and pains can be original. But the sensible pleasures and pains are evidently originals. They are therefore the only ones, *i. e.* they are the common source from whence all the intellectual pleasures and pains are ultimately derived.

When I say, that the intellectual pleasures *A* and *B* are deducible from one another, I do not mean, that *A* receives back again from *B* that lustre which it had conferred upon it; for this would be to argue in a circle; but that whereas both *A* and *B* borrow from a variety of sources, as well as from each other, they may, and indeed must, transfer by association, part of the lustre borrowed from foreign sources upon each other.

If we admit the power of association, and can also shew, that associations, sufficient in kind and degree, concur, in fact, in the several instances of our intellectual pleasures and pains, this will of itself exclude all other causes for these pleasures and pains, such as instinct, for instance. If we cannot trace out associations sufficient in kind and degree, still it will not be necessary to have recourse to other causes, because great allowances are to be made for the novelty, complexness, and intricacy of the subject. However, on the other hand, analogy may perhaps lead us to conclude, that as instinct prevails much, and reason a little, in brutes, so instinct ought to prevail a little in us. Let the facts speak for themselves.

SECT. I.

THE PLEASURES AND PAINS OF IMAGINATION.

I BEGIN with the pleasures and pains of imagination; and shall endeavour to derive each species of them by association, either from those of sensation, ambition, self-interest, sympathy, theopathy, and the moral sense, or from foreign ones of imagination. They may be distinguished into the seven kinds that follow.

First, The pleasures arising from the beauty of the natural world.

Secondly, Those from the works of art.

Thirdly, From the liberal arts of music, painting, and poetry.

Fourthly, From the sciences.

Fifthly, From the beauty of the person.

Sixthly, From wit and humour.

Seventhly, The pains which arise from gross absurdity, inconsistency, or deformity.

PROP. XCIV.—*To examine how far the just-mentioned Pleasures and Pains of Imagination are agreeable to the Doctrine of Association.*

THE PLEASURES ARISING FROM THE BEAUTY OF THE NATURAL WORLD.

The pleasures arising from the contemplation of the beauties of the natural world seem to admit of the following analysis.

The pleasant tastes, and smells, and the fine colours of fruits and flowers, the melody of birds, and the grateful warmth or coolness of the air, in the proper seasons, transfer miniatures of these pleasures upon rural scenes, which start up instantaneously so mixed with each other, and with such as will be immediately enumerated, as to be separately indiscernible.

If there be a precipice, a cataract, a mountain of snow, &c. in one part of the scene, the nascent ideas of fear and horror magnify and enliven all the other ideas, and by degrees pass into pleasures by suggesting the security from pain.

In like manner the grandeur of some scenes, and the novelty of others, by exciting surprise and wonder, *i. e.* by making a great difference in the preceding and subsequent states of mind, so as to border upon, or even enter the limits of pain, may greatly enhance the pleasure.

Uniformity and variety in conjunction are also principal sources of the pleasures of beauty, being made so partly by their association with the beauties of nature, partly by that with the works of art, and with the many conveniences which we receive from the uniformity and variety of the works of nature and art. They must therefore transfer part of the lustre borrowed from the works of art, and from the head of convenience, upon the works of nature.

Poetry and painting are much employed in setting forth the beauties of the natural world, at the same time that they afford us a high degree of pleasure from many other sources. Hence the beauties of nature delight poets and painters, and such as are addicted to the study of their works, more than others. Part of this effect is indeed owing to the greater attention of such persons to the other sources; but this comes to the same thing, as far as the general theory of the factitious, associated nature of these pleasures is concerned.

The many sports and pastimes, which are peculiar to the country, and whose ideas and pleasures are revived by the view of rural scenes, in an evanescent state, and so mixed together as to be separately indiscernible, do farther augment the pleasures suggested by the beauties of nature.

To these we may add, the opposition between the offensiveness, dangers, and corruption of populous cities, and the health, tranquillity, and innocence, which the actual view, or the mental contemplation, of rural scenes introduces; also, the pleasures of sociality and mirth, which are often found in the greatest perfection in country retirements, the amorous pleasures, which have many connexions with rural scenes; and those which the opinions and encomiums of others beget in us, in this, as in other cases, by means of the contagiousness observable in mental dispositions, as well as bodily ones.

Those persons who have already formed high ideas of the power, knowledge, and goodness of the Author of nature, with

suitable affections, generally feel the exalted pleasures of devotion upon every view and contemplation of His works, either in an explicit and distinct manner, or in a more secret and implicit one. Hence, part of the general indeterminate pleasures, here considered, is deducible from the pleasures of theopathy.

We must not omit in this place to remind the reader of a remark made above, *viz.* that green, which is the middle colour of the seven primary ones, and consequently the most agreeable to the organ of sight, is also the general colour of the vegetable kingdom, *i. e.* of external nature.

These may be considered as some of the principal sources of the beauties of nature to mankind in general. Inquisitive and philosophical persons have some others, arising from their peculiar knowledge and study of natural history, astronomy, and philosophy, in general. For the profusion of beauties, uses, fitnesses, elegance in minute things, and magnificence in great ones, exceeds all bounds of conception, surprise, and astonishment; new scenes, and those of unbounded extent, separately considered, ever presenting themselves to view, the more any one studies and contemplates the works of God.

And upon the whole, the reader may see, that there are sufficient sources for all those pleasures of imagination, which the beauties of nature excite in different persons; and that the differences which are found in different persons in this respect, are sufficiently analogous to the differences of their situations in life, and of the consequent associations formed in them.

An attentive person may also, in viewing or contemplating the beauties of nature, lay hold, as it were, of the remainders and miniatures of many of the particular pleasures here enumerated, while they recur in a separate state, and before they coalesce with the general indeterminate aggregate, and thus verify the history now proposed.

It is a confirmation of this history, that an attentive person may also observe great differences in the kind and degree of the relish which he has for the beauties of nature in different periods of his life; especially as the kind and degree may be found to agree in the main with this history.

To the same purpose we may remark, that these pleasures do not cloy very soon, but are of a lasting nature, if compared with the sensible ones; since this follows naturally from the great variety of their sources, and the evanescent nature of their constituent parts.

When a beautiful scene is first presented, there is generally great pleasure from surprise, from being struck with objects and circumstances which we did not expect. This presently declines; but is abundantly compensated afterwards by the gradual alternate exaltation of the several constituent parts of the complex pleasures, which also do probably enhance one another. And thus we may take several reviews of the same scene, before the

pleasure, which it affords, comes to its *maximum*. After this the pleasure must decline, if we review it often: but if at considerable intervals, so as that many foreign states of mind intervene, also so as that new sources of the pleasures of this kind be broken up, the pleasure may recur for many successions of nearly the same magnitude.

The same observations hold in respect of the pleasures from the beauties of nature in general, and indeed from all the other sources, works of art, liberal arts, sciences, &c. These all strike and surprise the young mind at first, but require a considerable time before they come to their *maximum*; after which some or other will always be at its *maximum* for a considerable time. However, the pleasures of imagination in general, as well as each particular set and individual, must decline at last from the nature of our frame. In what manner they ought to decline, so as to be consistent with our *summum bonum*, by yielding, in due time, to more exalted and pure pleasures, whose composition they enter, I will endeavour to show hereafter.

These pleasures are a principal source of those which are annexed to the view of uniformity with variety, as above noted, *i. e.* of analogies of various orders; and consequently are a principal incitement to our tracing out real analogies, and forming artificial ones.

The novel, the grand, and the marvellous, are also most conspicuous in the works of nature; and the last strikes us particularly in many of the phænomena of nature, by seeming to exceed all bounds of credibility, at the same time that we are certified by irrefragable evidences of the truth of the facts. The satiety which every pleasure begets in us, after some continuance, makes us thirst perpetually after the grand and novel; and, as it were, grasp at infinity in number and extent; there being a kind of tacit expectation, that the pleasure will be in proportion to the magnitude and variety of the causes, in the same manner as we observe, in other cases, the effects to be in some degree proportional to their causes.

The pleasures of novelty decline not only in this class, but also in all the others, sensible and intellectual, partly from our bodily frame, partly from the intermixture, and consequent association, of neutral circumstances (*i. e.* such as afford neither pleasure nor pain) in their successive recurrences.

A disposition to a pleasurable state is a general attendant upon health, and the integrity of our bodily faculties; and that in such a degree, as that actual pleasure will spring up from moderate incitements, from the transient introduction of the associated circumstances of former pleasurable states. If the body be indisposed in some degree, it is, however, possible to force it into a state of pleasure by the vivid introduction of various and powerful circumstances: but this unnatural state cannot last long; and, if the indisposition to pleasure be great,

it cannot be introduced at all. On the contrary, where the disposition to pleasure is preternaturally prevalent, as after wine and opium, and in certain morbid cases, the least hint will excite profuse joy, leaning chiefly to the pleasures of imagination, ambition, sympathy, or devotion, according to the circumstances.

It is easy to see how the doctrine of vibrations, which appears to be the only one that admits of permanent states of motion, and disposition to motion, in the brain, suits these last remarks in a peculiar manner.

THE BEAUTIES OF THE WORKS OF ART.

The works of art, which afford us the pleasures of beauty, are chiefly buildings, public and private, religious, civil, and military, with their appendages and ornaments, and machines of the several kinds, from the great ones employed in war, commerce, and public affairs, such as ships, military engines, machines for manufacturing metals, &c. down to clocks, watches, and domestic furniture. The survey of these things, when perfect in their kinds, affords great pleasures to the curious; and these pleasures increase for a certain time, by being cultivated and gratified, till at last they come to their height, decline, and give way to others, as has been already observed of the pleasures arising from the beauties of nature.

The chief sources of the pleasures which the fore-mentioned works of art afford, appear to be the following:—the beautiful illuminations from gay colours: the resemblance which the playthings, that pleased us when we were children, bear to them; the great regularity and variety observable in them; the grandeur and magnificence of some, and the neatness and elegance of others, and that especially if they be small; the fitness to answer useful ends; their answering a multiplicity of these by simple means, or by analogous complex ones, not exceeding certain limits in complexness; the knowledge conveyed in many cases; the strong associations with religion, death, war, justice, power, riches, titles, high birth, entertainments, mirth, &c. fashion, with the opinions and encomiums of persons supposed to be judges; the vain desire of having a taste, and of being thought connoisseurs and judges, &c. &c.

In architecture there are certain proportions of breadths, lengths, depths, and entire magnitudes, to each other, which are by some supposed to be naturally beautiful, just as the simple ratios of 1 to 2, 2 to 3, 3 to 4, &c. in music, yield sounds which are naturally pleasant to the ear. But it rather seems to me, that economical convenience first determined the ratios of doors, windows, pillars, &c. in a gross way, and then that the convenience of the artist fixed this determination to some few exact ratios, as in the proportion between the lengths and breadths of the pillars of the several orders. Afterwards these proportions

became associated so often with a variety of beauties in costly buildings, that they could not but be thought naturally beautiful at last. In merely ornamental parts the beauty of the proportions seems to arise entirely either from fashion, or from a supposed resemblance to something already fixed as a beautiful proportion. It is easy from these principles to account for the prevalency of different proportions, and general tastes, in different ages and countries.

THE PLEASURES ARISING FROM MUSIC, PAINTING, AND POETRY.

Let us next consider the three liberal and sister arts of music, painting, and poetry.

OF MUSIC.

Now, in respect of music, it is to be observed, that the simple sounds of all uniform sonorous bodies, and particularly the single notes of the several musical instruments, also all the concords, or notes, whose vibrations bear to each other the simple ratios of 1 to 2, 2 to 3, 3 to 4, &c. sounded together, or near to each other, may be considered as originally pleasant to the ear. Discords are originally unpleasant, and therefore, as in other like cases, may be made use of to heighten our pleasures, by being properly and sparingly introduced, so as to make a strong contrast. To which if we add the uniformity and variety observable in all good music, we shall have the chief pleasures affecting children and young persons, upon their being first accustomed to hear music.

By degrees the discords become less and less harsh to the ear, and at last even pleasant, at least by their associations with the concords, that go before or follow them; so that more, and also more harsh discords, are perpetually required to give a relish, and keep the sweetness of the concords from cloying. Particular kinds of air and harmony are associated with particular words, affections, and passions, and so are made to express these; besides which there is often a natural aptitude in the music to represent the affection, as in quick music, and concords to represent mirth. Music in general is connected with gaiety, public rejoicings, the amorous pleasures, riches, high rank, &c. or with battles, sorrow, death, and religious contemplations. There is an ambition to excel in taste, in performance, and in composition, and a difficulty which enhances the pleasure, &c. &c. till by these and such like ways, the judgments and tastes of different persons, in respect of music, become as different as we find them to be in fact.

OF PAINTING.

Our pleasures from pictures are very nearly related to those of imitation, which, as observed above, take up a considerable part of our childhood; and the several playthings representing men, houses, horses, &c. with which children are so much delighted, are to be considered, both as augmenting and gratifying this taste in them.

To this it is to be added, that as the ideas of sight are the most vivid of all our ideas, and those which are chiefly laid up in the memory as keys and repositories to the rest, pictures, which are something intermediate between the real object and the idea, and therefore in cases of sufficient likeness more vivid than the idea, cannot but please us by thus gratifying our desire of raising up a complete idea of an absent object. This an attentive person may observe in himself in viewing pictures.

The surprise and contrast which arise in children, upon their seeing persons and objects present in their pictures, which yet they know to be absent, by striking the mind with the impossible conception of the same thing in two places, are probably the sources of considerable pleasure to *them*.

To these causes let us add the gay colours, and fine ornaments, which generally go along with pictures; and we shall have the chief sources of the pleasures which painting affords to young persons, and to those who have not yet been much affected with the various incidents of life, and their representations, or acquired a taste and skill in these things.

For, after this, the pleasures arising from pictures are quite of another kind, being derived from the same sources as those that belong to the scenes, affections, and passions represented, from the poetical descriptions of these, from the precise justness of the imitation, from ambition, fashion, the extravagant prices of the works of certain masters, from association with the villas and cabinets of the noble, the rich, and the curious, &c. &c.

The nature of the caricatura, burlesque, grotesque, picturesque, &c. may be understood from what is delivered in other parts of this Section, concerning laughter, wit, humour, the marvellous, absurd, &c. to which they correspond.

Painting has a great advantage over verbal description, in respect of the vividness and number of ideas to be at once excited in the fancy; but its compass is, upon the whole, much narrower; and it is also confined to one point of time.

The representations of battles, storms, wild beasts, and other objects of horror, in pictures, please us peculiarly, partly from the near alliance which the ideas suggested bear to pain, partly from the secret consciousness of our own security, and partly because they awaken and agitate the mind sufficiently to be strongly affected with the other pleasures, which may then be offered to it.

OF POETRY.

The beauties and excellencies of good poetry are deducible from three sources. First, The harmony, regularity, and variety of the numbers or metre, and of the rhyme. Secondly, The fitness and strength of the words and phrases. Thirdly, The subject matter of the poem, and the invention and judgment exerted by the poet in regard to his subject. And the beauties arising from each of these are much transferred upon the other two by association.

That the versification has of itself a considerable influence, may be seen by putting good poetical passages into the order of prose. And it may be accounted for from what has been already observed of uniformity and variety, from the smoothness and facility with which verses run over the tongue, from the frequent coincidence of the end of the sentence, and that of the verse, at the same time that this rule is violated at proper intervals in all varieties, lest the ear should be tired with too much sameness, from the assistance which versification affords to the memory, from some faint resemblance which it bears to music, and its frequent associations with it, &c. &c.

The beauties of the diction arise chiefly from the figures; and therefore it will be necessary here to inquire into the sources of their beauties.

Now figurative words seem to strike and please us chiefly from that impropriety which appears at first sight, upon their application to the things denoted by them, and from the consequent heightening of the propriety as soon as it is duly perceived. For when figurative words have recurred so often as to excite the secondary idea instantaneously, and without any previous harshness to the imagination, they lose their peculiar beauty and force; and in order to recover this, and make ourselves sensible of it, we are obliged to recall the literal sense, and to place the literal and figurative senses close together, that so we may first be sensible of the inconsistency, and then be more affected with the union and coalescence.

Besides this, figurative expressions illuminate our discourses and writings by transferring the properties, associations, and emotions, belonging to one thing upon another, by augmenting, diminishing, &c. and thus, according as the subject is ludicrous or grave, they either increase our mirth and laughter, or excite in us love, tenderness, compassion, admiration, indignation, terror, devotion, &c.

When figures are too distant, or too obscure, when they augment or diminish too much, we are displeased; and the principal art in the use of figures is to heighten, as far as the imagination will permit, the greatest beauty lying upon the confines of what disgusts by being too remote or bombast. And this extreme limit for figurative expressions shews evidently, that the pleasure

arising from them is nearly allied to pain; and their beauty owing to a certain kind and degree of inconsistency.

However, as the various figures used in speaking and writing have great influences over each other, alter, and are much altered, as to their relative energy, by our passions, customs, opinions, constitutions, educations, &c. there can be no fixed standard for determining what is beauty here, or what is the degree of it. Every person may find, that his taste in these things receives considerable changes in his progress through life; and may, by careful observation, trace up these changes to the associations that have caused them. And yet, since mankind have a general resemblance to each other, both in their internal make and external circumstances, there will be some general agreements about these things common to all mankind. The agreements will also become perpetually greater, as the persons under consideration are supposed to agree more in their genius, studies, external circumstances, &c. Hence may be seen, in part, the foundation of the general agreements observable in critics, concerning the beauties of poetry, as well as that of their particular disputes and differences.

It may also be proper to remark here, that the custom of introducing figures in a copious manner into poetry, together with the transpositions, ellipses, superfluities, and high-strained expressions, which the laws of the versification have forced the best poets upon in some cases, have given a sanction to certain otherwise unallowable liberties of expression, and to a moderate degree of obscurity, and even converted them into beauties. To which it may be added, that a momentary obscurity is like a discord in music properly introduced.

The pleasure which we receive from the matter of the poem, and the invention and judgment of the poet, in this respect, arises from the things themselves described or represented. It is necessary therefore, that the poet should choose such scenes as are beautiful, terrible, or otherwise strongly affecting, and such characters as excite love, pity, just indignation, &c. or rather, that he should present us with a proper mixture of all these. For, as they will all please singly, so a well-ordered succession of them will much enhance these separate pleasures, by the contrasts, analogies, and coincidences, which this may be made to introduce. In all these things the chief art is to copy nature so well, and to be so exact in all the principal circumstances relating to actions, passions, &c. *i. e.* to real life, that the reader may be insensibly betrayed into a half belief of the truth and reality of the scene.

Verses well pronounced affect us much more, than when they merely pass over the eye, from the imitation of the affections and passions represented, by the human voice; and still much more, when acted well, and heightened by the proper conjunction of realizing circumstances.

Since poetry makes use of words, which are the principal channel of mutual communication for our thoughts and affections, and has by this means an unlimited compass in respect of time, place, &c. it must, upon the whole, have great advantages over painting.

As the pleasures of imagination are very prevalent, and much cultivated, during youth; so, if we consider mankind as one great individual, advancing in age perpetually, it seems natural to expect, that in the infancy of knowledge, in the early ages of the world, the taste of mankind would turn much upon the pleasures of this class. And agreeably to this it may be observed, that music, painting, and poetry, were much admired in ancient times; and the two last brought to great perfection. What was the real perfection of the ancient Grecian music, also how far the modern very artificial compositions ought to be allowed to excel them, must be left to those who are judges of these matters.

The beauties of oratory are very nearly allied to those of poetry, arising partly from an harmonious flow and cadence of the periods, so that uniformity and variety may be properly mixed, partly from the justness and nervousness of the expressions, and partly from the force of the arguments and motives brought together by the invention of the orator, and so disposed as to convince the judgment, excite and gain the affections. In both cases it is very necessary, that the reader or hearer should conceive favourably of the design and author, in a moral light. Poetry has the advantage of oratory, in respect of the sweetness of the numbers, and boldness of the figures; but oratory, being a real thing, and one which has great influence in many the most important transactions, does, by this reality, affect some persons more than poetry; I mean persons that are mere readers or hearers; for, as to those that are interested in the debate, to whom it is a reality, there can be no doubt.

The beauties of history will easily be understood from what is said of poetry and oratory.

It is to be observed, that poetry, and all fictitious history, borrow one chief part of their influence from their being imitations of real history, as this again does from the strong affections and passions excited by the events of life, and from the contagiousness of our tempers and dispositions.

The same kind of contrasts and coincidences, which, in low and comic things, would be wit or humour, become the brilliant passages that affect and strike us most eminently in grave poetry, in oratory, and history.

THE PLEASURES ARISING FROM THE STUDY OF THE SCIENCES.

The study of the sciences has a great connexion with the natural and artificial beauties already considered, and receives great lustre from them in consequence thereof.

But besides this, there are many original sources of pleasure in the study of the sciences: as, First, From the many instances of uniformity with variety: Secondly, From the marvellous and seemingly impossible which occur in all parts of knowledge: Thirdly, From the great advantages respecting human life, which accrue to mankind in general from the pursuit of knowledge, also from the honours, riches, &c. which are the rewards conferred upon particular persons that are eminent; Lastly, From the numerous connexions of truth of all kinds with those most amiable and important doctrines, which religion, natural and revealed, teaches us. And when these pleasures, in the several subordinate kinds and degrees, have been sufficiently associated with the favourite study, they render it at last pleasant in itself, as we usually term it, *i. e.* these several particular pleasures coalesce into a single general one, in which the compounding parts cannot be discerned separately from each other, and which consequently appears to have no relation to its several compounding parts; unless when by a particular attention to, and examination of, what passes in our minds, we lay hold of the last compounding parts before their entire coalescence, or reason upon the causes of these pleasures, by comparing their growth, and the changes made in them, with the concomitant circumstances. Thus if it be observed as a general fact, that persons grow fond of particular studies, remarkably after having received some great present advantage, or hope of a future one from them, we may reasonably presume, that the pleasure which they take in these studies, is in part derived from this source, even though it cannot be felt to arise from it explicitly.

OF INVENTION.

The copiousness and quickness of the invention being principal requisites for the cultivation of the arts and sciences with success, I will say something concerning invention here, my subject being now sufficiently opened for that purpose.

Invention then may be defined the art of producing new beauties in works of imagination, and new truths in matters of science. And it seems to depend, in both cases, chiefly upon these three things. First, A strong and quick memory: Secondly, An extensive knowledge in the arts and sciences; and particularly in those that are contiguous to, or not far distant from, that under consideration: and, Thirdly, The habit of forming and pursuing analogies, the deviations from these and the subordinate analogies in many of these first deviations, &c. &c.

First, A strong and quick memory is necessary, that so the ideas of the poet or philosopher may depend upon, and be readily suggested by, each other.

Secondly, He must have a large stock of ideas for the purposes of figures, illustrations, comparisons, arguments, motives,

criteria, &c. And it is evident that the ideas taken from such parts of knowledge, as are pretty nearly allied to his particular study, will be of most use to him in it.

Thirdly, Analogy will lead him by degrees, in works of fancy, from the beauties of celebrated masters to others less and less resembling these, till at last he arrives at such as bear no visible resemblance. Deviations, and the subordinate analogies contained within them, will do this in a much greater degree; and all analogies will instruct him how to model properly such entirely new thoughts as his memory and acquaintance with things have suggested to him. In science analogy leads on perpetually to new propositions; and being itself some presumption of truth, is a guide much preferable to mere imagination.

It may be observed, that the trains of visible ideas, which accompany our thoughts, are the principal fund for invention, both in matters of fancy and in science.

As invention requires the three things here spoken of, so, conversely, no person who is possessed of them, and who applies himself to any particular study either of the imaginative or abstract kind, with sufficient assiduity, can fail for want of invention. And the nature of this faculty seems as reconcilable with, and deducible from, the power of association, and the mechanism of the mind here explained, as that of any other.

THE BEAUTY OF THE PERSON.

The word *beauty* is applied to the person, particularly in the female sex, in an eminent manner; and the desires and pleasures arising from beauty, in this sense, may be considered as an intermediate step between the gross sensual ones, and those of pure esteem and benevolence; for they are, in part, deduced from both these extremes; they moderate, spiritualize, and improve the first, and, in the virtuous, are ultimately converted into the last.

But they arise also from many other sources in their intermediate state, particularly from associations with the several beauties of nature and art already mentioned, as of gay colours, rural scenes, music, painting, and poetry; from associations with fashion, the opinions and encomiums of others, riches, honours, high birth, &c. from vanity and ambition, &c. Besides which, the pleasure of gratifying a strong desire, and the pain of disappointment, are to be considered here, as being evidently distinguishable from all the rest in some cases.

That part of beauty which arises from symmetry, may perhaps be said to consist in such proportions of the features of the face, and of the head, trunk, and limbs, to each other, as are intermediate in respect of all other proportions, *i. e.* such proportions as would result from an estimation by an average: one may say

at least, that these proportions would not differ much from perfect symmetry.

The desires excited by the beauty of the person increase for some time, especially if the sensible ones are not gratified, and there be also a mixture of hope and fear, in the relation to the attainment of the affections of the beloved person. But they sometimes decrease, like other desires, from mere want of novelty, after the affections are gained; and must always do so after gratification. Nevertheless, if there be the proper foundation for esteem and religious affection in each party, mutual love, with the pleasures arising from it, may increase upon the whole, the real circumstances of life affording more than sufficient opportunity for gaining in one respect what is lost in another.

The beauty of the air, gesture, motions, and dress, has a great connexion with the beauty of the person, or rather makes a considerable part of it, contributing much to the sum total; and when considered separately, receiving much from the other part of the beauties of the person. The separate beauty of these things arises from some imitation of a natural or artificial beauty already established, from fashion, high birth, riches, &c. or from their being expressive of some agreeable or amiable quality of mind. The reciprocal influences of our ideas upon each other, and the endless variety of their combinations, are eminently conspicuous in this article; the strength of desire here rendering the associations, with the several steps previous to the perfect coalescence of the ideas associated, more visible than most other cases.

WIT AND HUMOUR.

I come now to examine the pleasures of mirth, wit, and humour.

But, first, it will be necessary to consider the causes of laughter, and particularly the mental ones.

Now it may be observed, that young children do not laugh aloud for some months. The first occasion of doing this seems to be a surprise, which brings on a momentary fear first, and then a momentary joy in consequence of the removal of that fear, agreeably to what may be observed of the pleasures that follow the removal of pain. This may appear probable, inasmuch as laughter is a nascent cry, stopped of a sudden; also because if the same surprise, which makes young children laugh, be a very little increased, they will cry. It is usual, by way of diverting young children, and exciting them to laughter, to repeat the surprise, as by clapping the hands frequently, reiterating a sudden motion, &c.

This is the original of laughter in children, in general; but the progress in each particular is much accelerated, and the occasions multiplied, by imitation. They learn to laugh, as they learn to talk and walk; and are most apt to laugh profusely,

when they see others laugh; the common cause contributing also in a great degree to produce this effect. The same thing is evident even in adults; and shews us one of the sources of the sympathetic affections.

To these things it is to be added, that the alternate motions of the chest follow the same degrees of mental emotion with more and more facility perpetually, so that at last children (who are likewise more exquisitely sensible and irritable than adults) laugh upon every trifling occasion.

By degrees they learn the power of suspending the actions both of laughing and crying, and associate this power with a variety of ideas, such as those of decency, respect, fear, and shame: the incidents and objects, which before occasioned emotion sufficient to produce laughter, now occasion little or none, from the transmutation of their associations: their new associated pleasures and pains are of a more sedate kind, and do not affect them so much by surprise; and, which is a principal cause in respect of individuals, their equals laugh less, and, by forming them to the same model with themselves, make the disposition to laughter decrease still faster. For whatever can be shewn to take place at all in human nature, must take place in a much higher degree than according to the original causes, from our great disposition to imitate one another, which has been already explained.

It confirms this account of laughter that it follows tickling, as noted above, *i. e.* a momentary pain and apprehension of pain, with an immediately succeeding removal of these, and their alternate recurrency; also that the softer sex, and all nervous persons, are much disposed both to laugh and cry profusely, and to pass quickly from one state to the other. And it may deserve to be inquired, how far the profuse, continued laughter and mirth on one hand, sorrow, hanging the lip, and crying, on the other, which occur in madness, agree with it.

As children learn the use of language, they learn to laugh at sentences or stories, by which sudden alarming emotions and expectations are raised in them, and again dissipated instantaneously. And as they learnt before by degrees to laugh at sudden unexpected noises, or motions, where there was no fear, or no distinguishable one, so it is, after some time, in respect of words. Children, and young persons, are diverted by every little jingle, pun, contrast, or coincidence, which is level to their capacities, even though the harshness and inconsistency, with which it first strikes the fancy, be so minute as scarce to be perceived. And this is the origin of that laughter which is excited by wit, humour, buffoonery, &c.

But this species of laughter abates also by degrees, as the other before considered did, and, in general, for the same causes; so that adults, and especially those that are judges of politeness and propriety, laugh only at such strokes of wit and humour, as

surprise by some more than ordinary degree of contrast or coincidence; and have at the same time a due connexion with pleasure and pain, and their several associations of fitness, decency, inconsistency, absurdity, honour, shame, virtue, and vice; so as neither to be too glaring on the one hand, nor too faint on the other. In the first case, the representation raises dislike and abhorrence; in the last, it becomes insipid.

From hence may be seen, that in different persons the occasions of laughter must be as different as their opinions and dispositions; that low similitudes, allusions, contrasts, and coincidences, applied to grave and serious subjects, must occasion the most profuse laughter in persons of light minds; and, conversely, increase this levity of mind, and weaken the regard due to things sacred; that the vices of gluttony, lewdness, vain-glory, self-conceit, and covetousness, with the concomitant pleasures and pains, hopes, fears, dangers, &c. when represented by indirect circumstances, and the representation heightened by contrasts and coincidences, must be the most frequent subject of mirth, wit, and humour, in this mixed degenerate state, where they are censured upon the whole; and yet not looked upon with a due degree of severity, distance, and abhorrence; that company, feasting, and wine, by putting the body into a pleasurable state, must dispose to laughter upon small occasions; and that persons who give themselves much to mirth, wit, and humour, must thereby greatly disqualify their understandings for the search after truth; inasmuch as by the perpetual hunting after apparent and partial agreements and disagreements, as in words, and indirect accidental circumstances, whilst the true natures of the things themselves afford real agreements and disagreements, that are very different, or quite opposite, a man must by degrees pervert all his notions of things themselves, and become unable to see them as they really are, and as they appear to considerate sober-minded inquirers. He must lose all his associations of the visible ideas of things, their names, symbols, &c. with their useful practical relations and properties; and get, in their stead, accidental, indirect, and unnatural conjunctions of circumstances, that are really foreign to each other, or oppositions of those that are united; and after some time, habit and custom will fix these upon him.

The most natural occasions of mirth and laughter in adults seem to be the little mistakes and follies of children, and the smaller inconsistencies and improprieties which happen in conversation, and the daily occurrences of life; inasmuch as these pleasures are, in great measure, occasioned, or at least supported, by the general pleasurable state, which our love and affection to our friends in general, and to children in particular, put the body and mind into. For this kind of mirth is always checked where we have a dislike; also where the mistake or inconsistency rises beyond a certain limit; for then it produces concern, con-

fusion, and uneasiness. And it is useful not only in respect of the good effects which it has upon the body, and the present amusement and relaxation that it affords to the mind; but also because it puts us upon rectifying what is so amiss, or any other similar error, in one another; or in children; and has a tendency to remove many prejudices from custom and education. Thus we often laugh at children, rustics, and foreigners, when yet they act right, according to the truly natural, simple, and uncorrupted dictates of reason and propriety, and are guilty of no other inconsistency than what arises from the usurpations of custom over nature; and we often take notice of this, and correct ourselves, in consequence of being diverted by it.

INCONSISTENCY, DEFORMITY, AND ABSURDITY.

Having now considered, in a short and general way, all the pleasures that seem properly to belong to the head of imagination, I will say something concerning the pains of this class, *viz.* those which arise from the view of gross inconsistency, absurdity, and deformity. Here we may observe,

First, That these pains are the root and source of many of the fore-mentioned pleasures, particularly those arising from figurative expressions, and of wit and humour, as has been shewn in treating of these things.

Secondly, That the disgust and uneasiness here considered never rise to any very great height, unless some of the pains of sympathy, or of the moral sense, mix themselves with them. From whence it seems to follow, that the mere *pleasures* of imagination and beauty are also of a kind much inferior to those of sympathy, and the moral sense.

The perplexity, confusion, and uneasiness, which we labour under in abstruse inquiries, philosophical, moral, and religious, ought, perhaps, to be referred to this head. Also the secondary perplexity which arises from our being subject to this perplexity, confusion, and uneasiness. However, all this is to be accounted for as any other evil, and does not seem to be attended either with greater or less difficulties. No perplexity can give us more than a limited degree of pain; and all our perplexities have probably both the same general good effects as our other pains; and also, like each of these, some good effects peculiar to themselves.

We may now observe upon the whole, that according to the foregoing history of the pleasures of imagination, there must be great differences in the tastes and judgments of different persons; and that no age, nation, class of men, &c. ought to be made the test of what is most excellent in artificial beauty; nor, consequently, of what is absurd. The only things that can be set up as natural criterions here, seem to be uniformity with variety, usefulness in general, and the particular subserviency of this or

that artificial beauty to improve the mind, so as to make it suit best with our present circumstances, and future expectations. How all these criterions consist with each other, and unite in the single criterion of religion, of the love of God, and of our neighbour, understood in the comprehensive sense of these words, I shall endeavour to shew hereafter.

SECT. II.

THE PLEASURES AND PAINS OF AMBITION.

PROP. XCV.—*To examine how far the Pleasures and Pains of Ambition are agreeable to the foregoing Theory.*

THE opinions of others concerning us, when expressed by corresponding words or actions, are principal sources of happiness or misery. The pleasures of this kind are usually referred to the head of honour; the pains to that of shame; but as it is most convenient to have a single word, to which to refer both the pleasures and pains of this class, I have made choice of ambition for that purpose. It will therefore be our business, under this proposition, to inquire by what association it is brought about, that men are solicitous to have certain particulars concerning themselves made known to the circle of their friends and acquaintance, or to the world in general; and certain others concealed from them; and also, why all marks and evidences, that these two several kinds of particulars are made known, so as to beget approbation, esteem, praise, high opinion, &c. or dislike, censure, contempt, &c. occasion such exquisite pleasures and pains, as those of honour and shame, *i. e.* of ambition.

The particulars which we desire to have made known to, or concealed from, others, in order to obtain praise, or avoid dispraise, may be classed under the four following heads.

First, External advantages or disadvantages.

Secondly, Bodily perfections and imperfections.

Thirdly, Intellectual accomplishments or defects.

Fourthly, Moral ones, *i. e.* virtue or vice.

I will now endeavour to shew what pleasures and pains, bodily and intellectual, are associated with the opinions which others form of us in these four respects; *i. e.* either with the several methods by which they receive their information; or with those by which they signify their having received it, and their consequent approbation or disapprobation, respect or contempt.

EXTERNAL ADVANTAGES AND DISADVANTAGES.

I begin with the consideration of external advantages or disadvantages.—The principal of these are fine clothes, riches, titles, and high birth; with their opposites, rags, poverty, obscurity, and low birth.

Now it is evident, that these external advantages and disadvantages become such by being made known to others: that the first gain men certain privileges and pleasures; and the last subject them to inconveniences and evils only, or chiefly, when they are discovered to the world. It follows therefore that every discovery of this kind to others, also every mark and associate of such discovery, will, by association, raise up the miniatures of the privileges and pleasures, inconveniences and evils, respectively; and thus afford, in each instance, a peculiar compound pleasure or pain, which, by the use of language, has the word *honour* or *shame* respectively annexed to it.

This is the gross account of the generation of these pleasures and pains; but the subordinate particulars contain many things worthy of observation.

Thus fine clothes please both children and adults, by their natural or artificial beauty; they enhance the beauty of the person; they excite the compliments and caresses of the attendants in a peculiarly vivid manner; they are the common associates of riches, titles, and high birth; they have vast encomiums bestowed upon them; and are sometimes the reward of mental accomplishments and virtue. Rags, on the contrary, are often attended with the most loathsome and offensive ideas, with bodily infirmity, poverty, contempt, and vice. It is easy therefore to see, that in our progress through life, a compound associated desire of fine clothes, and abhorrence of rags, will spring up so early as to be deemed a natural one. And if a person passes of a sudden from rags to fine clothes, or *vice versâ*, the pleasure or pain will be enhanced accordingly, by the juxtaposition of the opposites.

Now these pleasures and pains which thus attend a person's being actually dressed in fine clothes, or in rags, will, by farther associations, be transferred upon all the concomitant circumstances, the possession of fine clothes, the hopes of them, or the fear of rags; and particularly upon all narrations and symbols, whereby others are first informed of the person's dress, or discover their prior knowledge of it; so that the person shall have his vanity gratified, or his shame excited, by all such narrations, and by all the concomitant circumstances and symbols.

Riches, titles, and high birth, are attended with associates of the same kind as fine clothes; with this difference, however, that it requires a farther progress in life to be sufficiently affected with the compound pleasure resulting from the associates of these, and consequently for acquiring a taste for those pleasures

of honour, which riches, titles, and high birth afford. Agreeably to which it may be observed, that the first instance of pride and vanity in children is that which arises from fine clothes.

In the progress through life, especially in the virtuous, it often happens that opposite associations are generated, *i. e.* such as break the connexion between the ideas of happiness and fine clothes, riches, titles, high birth; also between misery and rags, poverty, obscurity, and low birth; nay there are some instances in which these last are connected with some kinds and degrees of happiness. Now in all these cases the pride and vanity, or shame, by which we hope or fear to have our circumstances, in these respects, known to the world, lessen, cease entirely, or even turn about to the opposite quarter accordingly; so that when a person has lost his desire of being rich, or high born, he also loses his desire of being thought so; and when he gains an opposite desire of becoming poor, on a religious account, for instance, or a complacence in being low born, on account of his present high station, &c. he desires also to have this known to the world. And yet there may, in most cases, be perceived some distance in time between the desire of *being*, and the subsequent associated desire of *being thought*, *viz.* such a distance of time as may suffice for the associations to produce their effect in.

Riches are attended with many conveniences, whether a person be known to possess them, or no; and there are inconveniences, as well as conveniences, attending the reputation of being rich; but titles and high birth are then only productive of privileges and pleasures when made known to the world; whence it is easy to see that pride and vanity may shew themselves much more commonly in respect of titles and high birth, than in respect of riches, which is agreeable to the fact.

The shamefacedness of rustics, poor persons, and inferiors in general, in the presence of their superiors, with the great confusion and uneasiness that often attend it, arises from the sources of honour and shame here laid open, and particularly from the strong contrast between their own circumstances and those of their superiors.

BODILY PERFECTIONS AND IMPERFECTIONS.

The chief bodily circumstances, which are the sources of the pleasures of honour, or of the pains of shame, are beauty, strength, and health, on the one hand; and their opposites, deformity, imbecility, unfitting a person for the functions of life, and disease, on the other. I will make some short remarks upon each.

Beauty has an intimate connexion with one of the most violent of our desires; affords a great pleasure, even where this desire is not felt explicitly; has the highest encomiums bestowed

upon it in books, especially in such as are too much in the hands of young persons, and the highest compliments paid to it in discourse; and is often the occasion of success in life; all which holds more particularly in respect of women, than of men. No wonder therefore, that both sexes, but especially women, should desire both to *be* and *be thought* beautiful, and be pleased with all the associated circumstances of these things; and that the fear of *being* or *being thought* deformed, should be a thing to which the imagination has the greatest reluctance. And the reputation of beauty, with the scandal of deformity, influences so much the more, as beauty and deformity are not attended with their respective pleasing or displeasing associates, except when they are made apparent to, and taken notice of by, the world. So that here the original desire is rather to be thought beautiful than to be so; and this last is chiefly a consequential one arising in our minds from the close connexion of *being* with *being thought*.

In strength it is otherwise. This is the source of many conveniences, and imbecility, its opposite, of many inconveniences, whether they be taken notice of or no; as well as of some which depend on their being thus taken notice of. It is reasonable therefore here to suppose, that our first and greatest desire should be after the thing itself, and so it is in fact. However, since several advantages arise from shewing our strength; since also the ostentation of happiness of any kind belonging to ourselves, or the notice which others take of it, bring in the pleasing idea with great vigour; it is evident that there must be eager desires of *being thought* strong, agile, &c. as well as of *being* so. And, by parity of reason, men will be much ashamed of *being thought* weak and feeble, as well as afraid of being so. And as women glory chiefly in beauty, so men do in strength; this being chiefly a source of advantages and pleasures [to men, as that is to women. Nay, one may even observe, that any great degree of beauty in men, or strength in women, by being opposite to that perfection which is peculiar to each sex, is thought rather undesirable than desirable.

Health and sickness have many connexions with beauty and strength, deformity and imbecility, respectively; and therefore may easily be conceived to become respectively the sources of the pleasures of honour or of the pains of shame, agreeable to the fact. But, in diseases, so many greater pains and evils, fears, anxieties, &c. with some pleasures, such as those of friendship, occur likewise, that there is, in most cases, little room for shame to exert itself: however, if the disease be the consequence either of a virtuous, or a vicious, course of action, the honour or shame, belonging to virtue or vice respectively, will be transferred upon it.

There is a high degree of shame, which attends the natural evacuations, particularly those of the fæces and urine, which is in part deduced from the offensiveness of the excrements of the

body, and is nearly related to the shame attending bodily infirmities and diseases. But this shame, as it respects the fæces and urine, has also a particular connexion with that which relates to the pudenda, arising from the vicinity of the organs; and thus they give and receive mutually. They are also both of them much increased by education, custom, and the precepts and epithets of parents and governors. The original sources of the shame relating to the pudenda are probably the privacy requisite (which is both cause and effect), the greatness of the pleasure, and the sense of guilt which often attends; and there may be perhaps something of instinct, which operates here quite independently of association.

INTELLECTUAL ACCOMPLISHMENTS AND DEFECTS.

The intellectual accomplishments and defects which occasion honour and shame, are sagacity, memory, invention, wit, learning; and their opposites, folly, dullness, and ignorance. Here we may deduce a considerable part from the many advantages arising from the accomplishments, disadvantages from the defects, in the same manner as has been done already in the two foregoing articles. But a great part, perhaps the greatest, is deduced from the high-strained encomiums, applauses, and flatteries, paid to parts of learning, and the outrageous ridicule and contempt thrown upon folly and ignorance, in all the discourses and writings of men of genius and learning; these persons being extremely partial to their own excellencies, and carrying the world with them by the force of their parts and eloquence. It is also to be observed, that in the education of young persons, and especially of boys and young men, great rewards are conferred in consequence of intellectual attainments and parts; and great punishments follow negligence and ignorance; which rewards and punishments, being respectively associated with the words expressing praise and censure, and with all their other circumstances, transfer upon praise and censure compound vivid miniatures, pleasant and painful.

In like manner all the kinds of honour and shame, by being expressed in words and symbols, that are nearly related to each other, enhance each other: thus, for instance, the caresses given to a child when he is dressed in fine clothes prepare him to be much more affected with the caresses and encomiums bestowed upon him when he has been diligent in getting his lesson. And indeed it ought to be remarked, that the words and phrases of the parents, governors, superiors, and attendants, have so great an influence over children, when they first come to the use of language, as instantly to generate an implicit belief, a strong desire, or a high degree of pleasure. They have no suspicions, jealousies, memories, or expectations of being deceived or disappointed; and therefore a set of words expressing pleasures of

any kind, which they have experienced, put together in almost any manner, will raise up in them a pleasurable state, and opposite words a painful one. Whence it is easy to see, that the fine language expressing praise, and the harsh one expressing dispraise, must instantly, from the mere associations heaped upon the separate words, put them into a state of hope and joy, fear and sorrow, respectively. And when the foundation is thus laid, praise and dispraise will keep their influence from the advantages and disadvantages attending them, though the separate words should lose their particular influences, as they manifestly do in our progress through life.

The honour and shame arising from intellectual accomplishments do often, in learned men, after some time, destroy, in great measure, their sensibility, in respect of every other kind of honour and shame; which seems chiefly to arise from their conversing much with books and learned men, so as to have a great part of the pleasures, which they receive from this their conversation, closely connected with the encomiums upon parts and learning; also to have all terms of honour applied to them, and the keenest reproach, and most insolent contempt, cast upon the contrary defects. And, as the pleasures which raillery, ridicule, and satire, afford to the by-standers, are very considerable, so the person who is the object of them, and who begins to be in pain upon the first slight marks of contempt, has this pain much enhanced by the contrast, the exquisiteness of his uneasiness and confusion rising in proportion to the degree of mirth, and insolent laughter, in the by-standers: whence it comes to pass, that extremely few persons have courage to stand the force of ridicule; but rather subject themselves to considerable bodily pains, to losses, and to the anxiety of a guilty mind, than appear foolish, absurd, singular, or contemptible to the world, or even to persons of whose judgment and abilities they have a low opinion.

All this is, in general, more applicable to men than to women, just as the honour and shame belonging to beauty and deformity is more applicable to women than men; both which observations are easily deducible from the different talents and situations in life of the two sexes.

VIRTUE AND VICE.

We come, in the last place, to consider moral accomplishments and defects, or virtue and vice. Now it is very evident, that the many advantages, public and private, which arise from the first, will engage the world to bestow upon it much honour and applause, in the same manner as the evil consequences of vice must make *it* the object of censure and reproach. Since therefore the child is affected with the words expressing honour and censure, both from the separate influences of these words, and from the application of phrases of this kind to other subjects of praise and

dispraise, he must be affected by the commendations bestowed upon him when he has done well, and by the censures past on him when he has done ill.

These commendations and censures are also attended with great immediate rewards and punishments, likewise with the hopes and fears relating to another world; and when the moral sense is sufficiently generated, with great secret indeterminate pleasure or pain of this kind; and these associations add a particular force to the honour and shame belonging respectively to virtue and vice. At the same time it is easy to see, that some considerable progress in life is ordinarily required before men come to be deeply and lastingly affected by these things; also that this kind of honour and shame may, at last, from the superior force of the associated pleasures and pains, absorb, as it were, all the other kinds. A religious man becomes at last insensible, in great measure, to every encomium and reproach, excepting such as he apprehends will rest upon him at the last day, from Him whose judgment cannot err.

This is the general account of the honour and shame paid to virtue and vice respectively. I will now make a few short strictures upon some of the principal virtues and vices.

First, then, piety is not in general, and amongst the bulk of mankind, had in great honour. This proceeds from several causes; as that in the order of our progress it is the last of the virtues, and therefore, having few votaries, it must have few advocates; that in the first attempts to attain it, men often fall into great degrees of enthusiasm and superstition, and so expose themselves to the charges of folly, madness, and self-conceit; and that pretences to it are often made use of by hypocrites to cover the worst designs. Now from these and such like causes it happens, that men are much ashamed to be thought devout, fearing that exquisite uneasiness, which being ridiculed and contemned as fools, madmen, and hypocrites, occasions. At the same time it appears, that amongst those who have made considerable advances in religion, piety will be had in the greatest honour: these see evidently how it may be distinguished from enthusiasm, superstition, and hypocrisy; and are very little solicitous concerning the opinions of the profane world, who are apt to confound them; and therefore as far as their piety will permit any foreign desire to arise, they have an exquisite relish for the honour and esteem proceeding from the reputation of piety.

Benevolence springs up more early in life than piety, and has at first view a more immediate good influence upon society. There are also greater numbers who arrive at some imperfect degrees of it, than who arrive at like degrees of piety; neither are the degenerations and counterfeits of benevolence so common as those of piety. On these accounts much greater and more frequent encomiums are bestowed upon it by the bulk of man-

kind, than upon piety; and these with the many advantages resulting from the reputation of being benevolent, make most persons eagerly desire this reputation; so that they perform many actions from mere ambition, or from a mixture of this with benevolence, which they desire the world should think to proceed from mere benevolence.

Military glory, and the high applauses bestowed upon personal courage, seem, in a considerable degree, deducible from this source, from the benevolent design of protecting the innocent, the helpless, one's friends and country, from invasions, robberies, wild beasts, &c. The connexion of these with bodily strength, and the characteristical perfections of men as distinguished from women and children; the rarity and difficulty of them; the vast encomiums bestowed upon them by poets, orators, and historians, especially in ancient times, *i. e.* by those authors which are read in schools, and lay hold of our pliant imaginations when young; the ridicule cast upon timorousness by boys and men, as not being a common imperfection amongst them; and the connexion of the fear of death with the sense of guilt; all concur likewise, and have carried mankind so far as to make them confer the highest honours upon the most cruel, lawless, and abominable actions, and consequently incite one another to perform such actions from ambitious views. However, this false glare seems to fade in theory, amongst writers; and one may hope that the practice of mankind will be, in some measure, agreeable to the corrections made in their theory.

Temperance and chastity have considerable honours bestowed upon them: but the shame and scandal attending the opposite vices, and which arise from the loathsome diseases, and the many miseries, which men bring upon themselves and others by these vices, are much more remarkable. The detail of these things might easily be delivered from parallel observations already made. It happens sometimes, that some degrees of these vices are looked upon by young and ignorant persons as honourable, from certain connexions with manliness, fashion, high life; however, this is still in conformity with the doctrine of association, and the derivation of all the pleasures of honour from happiness under some form or other; and, when the same persons become better instructed in the real consequences and connexions of things, their opinions change accordingly.

Negative humility, or the not thinking better or more highly of ourselves than we ought, in respect of external advantages, bodily, intellectual, or moral accomplishments, and being content with such regards as are our due, which is the first step; and then positive humility, or a deep sense of our own misery and imperfections of all kinds, and an acquiescence in the treatment which we receive from others, whatever it be; being virtues which are most commodious to ourselves and others, and highly amiable in the sight of all those who have made a due proficiency in religion,

and the moral sense, come at last to be honoured and esteemed in an eminent manner, and consequently to incite men from mere vanity and ambition to seek the praise of humility. And the ridicule and shame which attend vanity, pride, and self-conceit, concur to the same purpose; which is a remarkable instance of the inconsistency of one part of our frame with itself, as the case now stands, and of the tendency of vice to check and destroy itself.

From the whole of what has been delivered upon this class of pleasures and pains, one may draw the following corollaries.

COR. I. All the things in which men pride themselves, and for which they desire to be taken notice of by others, are either means of happiness, or have some near relation to it. And indeed it is not at all uncommon to see persons take pains to make others believe that they are happy, by affirming it in express terms. Now this, considered as a mere matter of fact, occurring to attentive observation, might lead one to conclude, that the pleasures of honour and ambition are not of an original, instinctive, implanted nature, but derived from the other pleasures of human life, by the association of these into various parcels, where the several ingredients are so mixed amongst one another, as hardly to be discernible separately. The young, the gay, and the polite, are ambitious of being thought beautiful, rich, high-born, witty, &c. The grave, the learned, the afflicted, the religious, &c. seek the praise of wisdom and knowledge, or to be esteemed for piety and charity; every one according to his opinions of these things, as the sources, marks, or offsprings of happiness. And when men boast of their poverty, low birth, ignorance, or vice, it is always in such circumstances, with such additions and contrasts, or under such restrictions, as that the balance, upon the whole, may, some way or other, be the more in their favour on that account.

COR. II. Praise and shame are made use of by parents and governors, as chief motives and springs of action; and it becomes matter of praise, to a child, to be influenced by praise, and deterred by shame; and matter of reproach, to be insensible in these respects. And thus it comes to pass, that praise and shame have a strong reflected influence upon themselves; and that praise begets the love of praise, and shame increases the fear of shame. Now, though the original praise, commendation, blame, censure, &c. of good parents and preceptors, extend only, for the most part, to acquired accomplishments and defects, and particularly to virtue and vice; yet the secondary influence will affect men in respect of all sorts of encomiums and censures, of every thing that comes under the same denomination, that is associated with, or tied up by, the same words. Though the preceptor direct his pupil only to regard the judgment of the wise and good, still there are so many like circumstances attending the judgment of others, that it will be regarded something the

more from the lessons received, in respect to the wise and good, exclusively of others.

COR. III. In considering the sources of honour and shame, it will appear, that they are by no means consistent with one another; and, by a farther inquiry, that the *maximum* of the pleasures of this class ultimately coincides, *omni ex parte*, with moral rectitude.

SECT. III.

THE PLEASURES AND PAINS OF SELF-INTEREST.

PROP. XCVI.—*To examine how far the Pleasures and Pains of Self-Interest are agreeable to the foregoing Theory.*

SELF-INTEREST may be distinguished into three kinds, *viz.*

First, Gross self-interest, or the cool pursuit of the means whereby the pleasures of sensation, imagination, and ambition, are to be obtained, and their pains avoided.

Secondly, Refined self-interest, or a like pursuit of the means that relate to the pleasures and pains of sympathy, theopathy, and the moral sense.

And, Thirdly, Rational self-interest, or the pursuit of a man's greatest possible happiness, without any partiality to this or that kind of happiness, means of happiness, means of a means, &c.

GROSS SELF-INTEREST.

The love of money may be considered as the chief species of gross self-interest, and will help us, in an eminent manner, to unfold the mutual influences of our pleasures and pains, with the factitious nature of the intellectual ones, and the doctrine of association in general, as well as the particular progress, windings, and endless redoublings of self-love. For it is evident at first sight, that money cannot naturally and originally be the object of our faculties; no child can be supposed born with the love of it. Yet we see, that some small degrees of this love rise early in infancy; that it generally increases during youth and manhood; and that at last, in some old persons, it so engrosses and absorbs all their passions and pursuits, as that from being considered as the representative, standard, common measure and means of obtaining the commodities which occur in common life, it shall be esteemed the adequate exponent and means of happiness in general, and the thing itself, the sum total of all that is

desirable in life. Now the monstrous and gigantic size of this passion, in such cases, supported evidently by association alone, will render its progress and growth more conspicuous and striking; and consequently greatly contribute to explain the corresponding particulars in other passions, where they are less obvious.

Let us inquire, therefore, for what reason it is that children first begin to love money. Now they observe, that money procures for them the pleasures of sensation, with such of imagination as they have acquired a relish for. They see that it is highly valued by others; that those who possess it are much regarded and caressed; that the possession of it is generally attended by fine clothes, titles, magnificent buildings, &c.; imitation, and the common contagion of human life, having great power here, as in other cases. Since therefore ideas exciting desire are thus heaped upon money by successive associations perpetually recurring, the desire of it in certain sums and manners, *viz.* such as have often recurred with the concomitant pleasures, must at last grow stronger than the fainter sensible and intellectual pleasures; so that a child shall prefer a piece of money to many actual gratifications to be enjoyed immediately.

And as all the fore-mentioned associations, or such as are analogous to them, continue during life, it seems probable, that the love of money would at last devour all the particular desires, upon which it is grounded, was it not restrained by counter-associations; just as it was observed above, that the pleasure of gratifying the will would devour all the particular pleasures, to which it is a constant associate, did not repeated disappointments preserve us from this enormous increase of wilfulness.

Let us next examine how the love of money is checked.

First, then, It is checked by the strong desires of young persons, and others, after particular gratifications; for these desires, by overpowering their acquired aversion to part with money, weaken it gradually, and consequently weaken the pleasure of keeping, and the desire of obtaining, all which are closely linked together in this view; notwithstanding that the last, *viz.* the desire of obtaining, and by consequence (in an inverted order) the pleasure of keeping, and the aversion to part with, are strengthened by the desires of particular pleasures to be purchased by money, in another view. And this contrariety of our associations is not only the means of limiting certain passions, but is a mark set upon them by the Author of nature, to shew that they ought to be limited, even in our progress through this life; and that they must ultimately be annihilated, every one in its proper order.

Secondly, The insignificancy of riches in warding off death and diseases, also shame and contempt in many cases, and in obtaining the pleasures of religion, and the moral sense, and even those of sympathy, ambition, imagination, and sensation,

first lessen their value in the eyes of those who make just observations upon things in their progress through life, and afterwards fix a positive nothingness and worthlessness upon them.

Thirdly, The eager pursuit of any particular end, as fame, learning, the pleasures of the imagination, &c. leaves little room in the mind either for avarice, or any other foreign end.

Now by these and such like considerations we may account not only for the limitation put to the love of money, but also for certain mixtures of tempers and dispositions, which are often found in fact, and yet seem at first sight inconsistent ones. Thus profuseness, in respect of sensual and selfish pleasures, is often joined with avarice. Covetous persons are often rigidly just in paying, as well as exacting; and sometimes generous, where money is not immediately and apparently concerned. They have also moderate passions in other respects; for the most part, are suspicious, timorous, and complaisant. And the most truly generous, charitable, and pious persons, are highly frugal, so as to put on the appearance of covetousness, and even sometimes, and in some things, to border upon it.

We may see also, why the love of money must, in general, grow stronger with age; and especially if the particular gratifications, to which the person was most inclined, become insipid or unattainable—Why frequent reflections upon money in possession, and the actual viewing large sums, strengthen the associations by which covetousness is generated—Why children, persons in private and low life, and indeed most others, are differently affected towards the same sum of money, in different forms, gold, silver, notes, &c.

Let us next inquire, for what reasons it is that the love of money has the idea of selfishness attached to it in a peculiar manner, much more so than the pursuit of the pleasures of honour, imagination, or sympathy; whereas all are equally generated by association, from sensible and selfish pleasures, all in their several degrees promote private happiness, and are all pursued, in some cases, coolly and deliberately, from the prospect of obtaining private happiness thereby. Now the reasons of this seem to be,

First, That whatever riches one man obtains, another must lose; so that the circulation of money by trades, professions, offices, &c. is a kind of gaming; and has most of the same disgustful ideas annexed to it, when considered with some attention, and exclusively of private selfish feelings; whereas the pleasures of sympathy consist in doing good to others; those of ambition are scarce attainable in any great degree without this, or at least the appearance of it; and the pleasures of imagination are both capable of a very extensive communication, and most perfect when enjoyed in company.

Secondly, A regard to self frequently recurring must denominate a pleasure selfish; so that if any of the most generous

pleasures, and such as at first view have no immediate relation to self-interest, be pursued in a cool deliberate way, not from the influence of a present inclination, but the pre-conceived opinion that it will afford pleasure, this is referred to self-interest. Now money has scarce any other relation to pleasure than that of an evident means; so that even after it has gained the power of pleasing instantaneously, the intermediate deliberate steps and associations must, however, frequently appear. It procures the other pleasures for us every day, after it has become pleasant in itself; and therefore must always be considered as a principal means. The other pleasures have, in general, a far greater share of indirect associations with previous pleasures, and acquire the power of gratifying, not so much from being manifest causes of other gratifications, as their most common adjuncts; whereas money is generally the most visible of all the causes. But honour, power, learning, and many other things, are pursued, in part, after the same manner, and for the same reasons, as riches; *viz.* from a tacit supposition, that the acquisition of every degree of these is treasuring up a proportional degree of happiness, to be produced and enjoyed at pleasure. And the desires of each of these would in like manner increase perpetually during life, did they not curb one another by many mutual inconsistencies, or were not all damped by the frequent experience and recollection, that all the means of happiness cease to be so, when the body or mind cease to be disposed in a manner proper for the reception of happiness.

It is also worthy of observation, that riches, honours, power, learning, and all other things, that are considered as means of happiness, become means and ends to each other in a great variety of ways, thus transferring upon each other all the associated pleasures which they collect from different quarters, and approaching nearer and nearer perpetually to a perfect similarity and sameness with each other, in the instantaneous pleasures which they afford when pursued and obtained as ends.

It appears likewise that all aggregates of pleasure, thus collected by them all, must, from the mechanism and necessity of our natures, and of the world which surrounds us, be made at last to centre and rest upon Him who is the inexhaustible fountain of all power, knowledge, goodness, majesty, glory, property, &c. So that even avarice and ambition are, in their respective ways, carrying on the benevolent designs of Him who is *All in All*. And the same thing may be hoped of every other passion and pursuit. One may hope, that they all agree and unite in leading to ultimate happiness and perfection. However, they differ greatly in their present consequences, and in their future ones, reaching to certain intervals of time, indefinite and unknown to us, thus becoming good or evil, both naturally and morally, in respect of us, and our limited apprehensions, judgments, and anticipations. And yet one may humbly hope,

as was said above, that every thing must be ultimately good, both naturally and morally.

REFINED SELF-INTEREST.

The second species of self-interest is that which I call refined self-interest. As the foregoing species is generated by an attention to, and frequent reflection upon, the things which procure us the pleasures of sensation, imagination, and ambition; and, therefore, cannot prevail, in any great degree, till these pleasures have been generated, and prevailed for some time; so this species, or refined self-interest, which is a cool, deliberate seeking for ourselves the pleasures of sympathy, religion, and the moral sense, pre-supposes the generation of these pleasures, and the enjoyment of them for a sufficient time. And as some degree of gross self-interest is the natural and necessary consequence of the three first classes of pleasures, so is some degree of refined self-interest of the three last. A person who has had a sufficient experience of the pleasures of friendship, generosity, devotion, and self-approbation, cannot but desire to have a return of them, when he is not under the particular influence of any one of them, but merely on account of the pleasure which they have afforded; and will seek to excite these pleasures by the usual means, to treasure up to himself such means, keep himself always in a disposition to use them, &c. not at all from any particular vivid love of his neighbour, or of God, or from a sense of duty to him, but entirely from the view of private happiness. At least, there will be a great mixture of this refined self-interest in all the pleasures and duties of benevolence, piety, and the moral sense.

But then this refined self-interest is neither so common, nor so conspicuous in real life, as the gross one, since it rises late, is never of any great magnitude in the bulk of mankind, through their want of the previous pleasures of sympathy, religion, and the moral sense, in a sufficient degree, and in some it scarce prevails at all; whereas gross self-interest rises early in infancy, and arrives at a considerable magnitude before adult age. The detail of this second species of self-interest may be seen in books of practical religion.

RATIONAL SELF-INTEREST.

The third species of self-interest is the rational. This is the same thing with the abstract desire of happiness, and aversion to misery, which is supposed to attend every intelligent being during the whole course of his existence. I have already endeavoured to shew, that this supposition is not true in the proper sense of the words; and yet that very general desires do frequently recur to the mind, and may be excited by words and symbols of general import.

The hopes and fears relating to a future state, or to death, which is our entrance into it, are of this kind, and may be considered as proceeding from rational self-interest, in the highest and most abstracted sense that the terms admit of practically, since we have no definite knowledge of the nature and kind of the happiness or misery of another world. These hopes and fears are also the strongest of our selfish affections, and yet at the same time the chief foundation of the pure disinterested love of God, and of our neighbour, and the principal means of transferring our associations, so as that we may love and hate, pursue and fly, in the manner the best suited to our attainment of our greatest possible happiness. For hope, being itself a pleasure, may, by association, render indifferent, and even disagreeable, objects and actions pleasant; and fear may make agreeable ones painful: hence we can either increase desires and aversions, that are suitable to our state, or obliterate and convert them into their contraries, if they be unsuitable, by means of their connexion with the hopes and fears of death, and a future state. I will therefore briefly state the rise and progress of these hopes and fears.

All our first associations with the idea of death are of the disgusting and alarming kind; and they are collected from all quarters, from the sensible pains of every sort, from the imperfection, weakness, loathsomeness, corruption, and disorder, where disease, old age, death, animal or vegetable, prevail, in opposition to the beauty, order, and lustre of life, youth, and health; from the shame and contempt attending the first in many instances; whereas the last are honourable, as being sources of power and happiness, the reward of virtue, &c.; and from the sympathetic passions in general. And it is necessary, that the heedlessness and inexperience of infancy and youth should be guarded by such terrors, and their head-strong appetites and passions curbed, that they may not be hurried into danger and destruction before they are aware. It is proper also that they should form some expectations with respect to, and set some value upon, their future life in this world, that so they may be better qualified to act their parts in it, and make the quicker progress to perfection during their passage through it.

When children begin to have a sense of religion and duty formed in them, these do still farther heighten and increase the fear of death for the most part. For though there are rewards on the one hand, as well as punishments on the other; yet fear has got the start from the natural causes of it before-mentioned: and as pain is in general greater than pleasure, as was shewn above, from its consisting in stronger vibrations; so fear is in general more vivid than hope, especially in children.

Moreover, the sensual and selfish appetites are the original of all the rest; yet these are sinful, and inconsistent with our own and others' happiness; they must therefore be restrained, and at

last eradicated. But parents and governors are, in this case, more apt to have recourse to fear than to hope (in general, I suppose with reason, because hope is too feeble to withstand the violence of the natural appetites and passions.) And it is to be added to all, that adults, by discovering, in general, much more of fear and sorrow in the apprehensions or prospect of death, than of hope and comfort, from the continuance of the causes just mentioned, propagate and increase the fear still farther in one another, and in children, infecting all around them, as is usual in other cases of the like kind. And by this means it comes to pass, that the fear of death does in some circumstances, particularly where the nervous system is, through a bodily disorder, reduced to an aptness to receive uneasy and disgusting vibrations, only or chiefly, being in a state of irritability approaching to pains, grow to a most enormous size, collecting and uniting every disagreeable idea and impression under the associations belonging to death; so that such persons live in perpetual anxiety and slavery to the fear of death. And where there is the consciousness of past guilt, or the want of an upright intention for the future, it rages with still greater fierceness, till these be removed entirely, or in part, by repentance and amendment.

It is farther to be observed, that the fear of death is much increased by the exquisiteness of the punishments threatened in a future state, and by the variety of the emblems, representations, analogies, and evidences, of natural and revealed religion, whereby all the terrors of all other things are transferred upon these punishments; also by that peculiar circumstance of the eternity of them, which seems to have been a general tradition previous to the appearance of Christianity, amongst both Jews and Pagans, and which has been the doctrine and opinion of the Christian world ever since, some very few persons excepted. The consideration of any thing that is infinite, space, time, power, knowledge, goodness, perfection, &c. quite overpowers the faculties of the soul with wonder and astonishment: and when the peculiar feeling and concern belonging to *self* are applied here, and excited by the word *infinite*, by meditation, reading, &c. we must, and we ought to be alarmed to the full extent of our capacities. And the same conclusion follows, though we should suppose the punishments of a future state not to be absolutely and metaphysically infinite. For their great exquisiteness, and long duration, which are most clearly and plainly declared in the Scriptures, make them practically so.

This is a brief sketch of the origin and progress of the fears attending the consideration of death, and a future state. We now come to inquire, how the hopes are generated.

First, then, We are to observe, that repentance, amendment, and consciousness of past virtue, and of good intentions for the future, give a title to the hopes and rewards of a future state;

and that though while there are perpetual alternations of opposite consciousnesses, *i. e.* recollections and judgments on our own actions, the fear may prevail in general, both from the additional weight of the natural fear, and from the previous possession which the religious fear has obtained; yet by degrees the agreeable consciousness must prevail in those who are sincere (and sometimes it is to be feared a delusive one of the same kind in others), moderate the religious fear by little and little, and, in great measure, overcome the natural one; for which the way has been prepared from the superior strength of the religious fear, which has already obscured it in serious persons. And thus by degrees hope will begin to take place, as the general state of the mind, and the consideration of death, and a future state, become, for the most part, matter of joy and comfort.

Secondly, The deliverance from the fear of death adds greatly to this joy, in the same way as the removal of other pains is made the source of pleasure. And the returns of the fear of death at certain intervals, according to the state of our bodies or minds, and the moral qualities of our actions, will, if they be not too frequent, keep up this source of pleasure in the hope of futurity.

Thirdly, When the slavish fear of God is thus removed by faith and hope, all the pleasing sympathetic affections, such as love, gratitude, confidence, begin to exert themselves with respect to God, in a manner analogous, but in a degree far superior, to that in which they are exerted towards men. And it is easy to see how these, and such like causes concurring, may, in many cases, quite overcome the natural and religious fears of death and pain, and even make them acceptable.

Cor. From hence we may pass to the fervours of devotion; these being chiefly the hopes, and pleasing affections, just spoken of, coalescing together so intimately by repeated associations, as that the separate parts there mentioned cannot be distinguished from each other in the compound. And as these fervours are themselves often esteemed a sign of holiness, and consequently a foundation of farther hope, they perpetuate and increase themselves for a certain time, *i. e.* till the new convert finds the reiterated appearance of the same ideas give less and less emotion and pleasure, just as in the other pleasures, sensible and intellectual; looks upon this as a mark of spiritual desertion; finds numberless, unexpected, unthought of, sins and imperfections, not yet subdued; falls into bodily disorders, from unseasonable severities, or spiritual intemperance, &c.; and thus becomes dejected, scrupulous, and fearful.

By degrees the fears taken from death, and a future state, are confined to the mere apprehension of transgression, without any regard had to those, and even where they, when considered and expected, raise no fears.

However, all these things mortify pride, and the refined self-

interest; lead, or even compel, men to resign all to God; and so advance them to a more pure, disinterested, and permanent love of God, and of their neighbour, than they could have arrived at (all other things remaining the same), had they not undergone these anxieties; and therefore are to be esteemed the kind corrections of an Infinitely Merciful Father.

SECT. IV.

THE PLEASURES AND PAINS OF SYMPATHY.

PROP. XCVII.—*To examine how far the Pleasures and Pains of Sympathy are agreeable to the foregoing Theory.*

THE sympathetic affections may be distinguished into four classes, *viz.*

First, Those by which we rejoice at the happiness of others.

Secondly, Those by which we grieve for their misery.

Thirdly, Those by which we rejoice at their misery.

And Fourthly, Those by which we grieve for their happiness.

Of the first kind are sociality, good-will, generosity, and gratitude. Of the second, compassion and mercy. Of the third, moroseness, anger, revenge, jealousy, cruelty, and malice. And of the fourth, emulation and envy.

It is easy to be conceived, that associations should produce affections of all these four kinds, since in the intercourses of life the pleasures and pains of one are, in various ways, intermixed with, and dependent upon, those of others, so as to have clusters of their miniatures excited, in all the possible ways in which the happiness or misery of one can be combined with the happiness or misery of another; *i. e.* in the four above-mentioned. I will now enter upon the detail of the rise and progress of each of them.

THE AFFECTIONS BY WHICH WE REJOICE AT THE HAPPINESS OF OTHERS.

The first of these is sociality, or the pleasure we take in the mere company and conversation of others, particularly of our friends and acquaintance, and which is attended with mutual affability, complaisance, and candour. Now most of the pleasures which children receive are conferred upon them by others, their parents, attendants, or play-fellows. And the number of the pleasures which they receive in this way, is far greater than

that of the pains brought upon them by others. Indeed the hurts, and bodily injuries, which they meet with, are chiefly from themselves; and the denials of gratifications are either very few in number, or, if they be more frequent, give little uneasiness. It appears therefore, that, according to the doctrine of association, children ought to be pleased, in general, with the sight and company of all their acquaintance. And the same things, with some alterations, hold in respect of adults, through the whole course and general tenor of human life.

Besides the pleasures for which we are indebted to others, there are many which we enjoy in common with others, and in their company and conversation, and which therefore both enhance, and are enhanced by, the gaiety and happiness that appear in the countenances, gestures, words, and actions, of the whole company. Of this kind are the pleasures of feasting, sports and pastimes, rural scenes, polite arts, mirth, raillery, and ridicule, public shows, public rejoicings, &c. And in general it may be observed, that the causes of joy and grief are common to great numbers, affecting mankind according to the several divisions and subdivisions thereof into nations, ranks, offices, ages, sexes, families, &c. And by all these things it comes to pass, that the face of an old acquaintance brings to view, as it were, the indistinct mixed recollection, the remaining vestiges of all the good and evil which we have felt, while his idea has been present with us.

The same observation may be made upon places; and particularly upon those where a man has spent his infancy and youth.

To all this it is to be added, that the rules of prudence, good manners, and religion, by restraining all rusticity, moroseness, and insolence, and obliging us to actions of a contrary nature, even though we have not the proper internal feelings, do by degrees contribute to beget these in us, *i. e.* to beget sociality and complaisance; just in the same manner, as a person in a passion becomes much more inflamed from his own angry expressions, gestures, and actions.

Good-will, or benevolence, when understood in a limited sense, may be termed that pleasing affection which engages us to promote the welfare of others to the best of our power. If it carry us so far as to forego great pleasures, or endure great pains, it is called generosity. But good-will and benevolence, in a general sense, are put for all the sympathetic affections of the first and second class, *viz.* those by which we either rejoice in, and promote, the happiness of others, or grieve for, and endeavour to remove, their misery; as ill-will and malevolence, understood in a general sense also, are put for the contrary affections, *viz.* those of the third and fourth class.

Benevolence, in the limited sense, is nearly connected with sociality, and has the same sources. It has also a high degree of

honour and esteem annexed to it, procures us many advantages, and returns of kindness, both from the person obliged, and others; and is most closely connected with the hope of reward in a future state, and with the pleasures of religion, and of self-approbation, or the moral sense. And the same things hold with respect to generosity in a much higher degree. It is easy therefore to see, how such associations may be formed in us, as to engage us to forego great pleasure, or endure great pain, for the sake of others; how these associations may be attended with so great a degree of pleasure as to overrule the positive pain endured, or the negative one from the foregoing of a pleasure; and yet how there may be no direct, explicit expectation of reward, either from God or man, by natural consequence, or express appointment, not even of the concomitant pleasure which engages the agent to undertake the benevolent or generous action. And this I take to be a proof from the doctrine of association, that there is, and must be, such a thing as pure disinterested benevolence; also a just account of the origin and nature of it.

Gratitude includes benevolence, and therefore has the same sources with some additional ones; these last are the explicit or implicit recollection of the benefits and pleasures received, the hope of future ones, the approbation of the moral character of the benefactor, and the pleasures from the honour and esteem attending gratitude, much enhanced by the peculiar baseness and shamefulness of ingratitude.

THE AFFECTIONS BY WHICH WE GRIEVE FOR THE MISERY OF OTHERS.

Compassion is the uneasiness which a man feels at the misery of another. Now this in children seems to be grounded upon such associations as these that follow: the very appearance and idea of any kind of misery which they have experienced, or of any signs of distress which they understand, raise up in their nervous systems a state of misery from mere memory, on account of the strength of their imaginations; and because the connexion between the adjuncts of pain, and the actual infliction of it, has not yet been sufficiently broken by experience, as in adults.—When several children are educated together, the pains, the denials of pleasures, and the sorrows, which affect one, generally extend to all in some degree, often in an equal one.—When their parents, attendants, &c. are sick or afflicted, it is usual to raise in their minds the nascent ideas of pains and miseries, by such words and signs as are suited to their capacities; they also find themselves laid under many restraints on this account. And when these and such like circumstances have raised the desires and endeavours to remove the causes of these their own

internal uneasy feelings, or, which is the same thing, of these miseries, of others (in all which they are much influenced, as in other like cases, by the great disposition to imitate before spoken of); and a variety of internal feelings and desires of this kind are so blended and associated together, as that no part can be distinguished separately from the rest; the child may properly be said to have compassion.

The same sources of compassion remain, though with some alterations, during our whole progress through life; and an attentive person may plainly discern the constituent parts of his compassion, while they are yet the mere internal, and as one may say, selfish feelings above-mentioned; and before they have put on the nature of compassion by coalescence with the rest.

Agreeably to this method of reasoning, it may be observed, that persons whose nerves are easily irritable, and those who have experienced great trials and afflictions, are in general more disposed to compassion than others; and that we are most apt to pity in those diseases and calamities, which we either have felt already, or apprehend ourselves in danger of feeling hereafter.

But adults have also many other sources of compassion, besides those already mentioned, and which differ according to their educations and situations in life. When love, natural affection, and friendship, have taught men to take a peculiar delight in certain objects, in mutual endearments and familiar intercourses, those miseries affecting the beloved objects, which either totally destroy, or greatly interrupt, these intercourses, must give an exquisite uneasiness; and this uneasiness, by mixing itself with the other parts of our compassionate affections, will greatly increase the sum total in respect of these beloved objects.—A compassionate temper being great matter of praise to those who are endued with it, and the actions which flow from it being a duty incumbent on all, men are led to practise these actions, and to inculcate upon themselves the motives of compassion, by attending to distress actually present, or described in history, real or fictitious.—The peculiar love and esteem which we bear to morally good characters, make us more sensibly touched with their miseries; which is farther augmented by our indignation, and want of compassion, for morally ill characters, suffering the just punishment of their crimes. In like manner, the simplicity, the ignorance, the helplessness, and the many innocent diverting follies of young children, and of some brutes, lead men to pity them in a peculiar manner.

Mercy has the same general nature and sources as compassion, and seems to differ from it only in this, that the object of it has forfeited his title to happiness, or the removal of misery, by some demerit, particularly against ourselves. Here therefore resentment for an injury done to ourselves, or what is called a just

indignation against vice in general, interferes, and checks the otherwise natural course of our compassion, so as, in the unmerciful, entirely to put a stop to it. But, in the merciful, the sources of compassion prevail over those of resentment and indignation; whence it appears, that the compassion required in acts of mercy, is greater than that in common acts of mere compassion; agreeable to which, it is observable, that mercy is held in higher esteem than mere compassion.

THE AFFECTIONS BY WHICH WE REJOICE AT THE MISERY OF OTHERS.

We come now to the affections of the third class, *viz.* moroseness, anger, revenge, jealousy, cruelty, and malice. Now moroseness, peevishness, severity, &c. are most apt to arise in those persons who have some real or imaginary superiority over others, from their rank, years, office, accomplishments, &c. which either magnifies the failures of duty in inferiors with respect to them, or engages them to be very attentive to these.—Bodily infirmities, and frequent disappointments, by making the common intercourses of life insipid, and enhancing small injuries; delicacy and effeminacy, by increasing the sensibility both of body and mind, with respect to pain and uneasiness; luxury, by begetting unnatural cravings which clash not only with the like craving of others, but also with the common course and conveniences of human life; and, in short, all kinds of selfishness; have the same ill effect upon the temper.—The severe scrutiny which earnest penitents make into their own lives, during their novitiate, and the rigid censures which they pass upon their own actions, are often found, in proud and passionate tempers, to raise such indignation against vice, as breaks out into an undue severity of language and behaviour, in respect of others; and this, especially if they seem to themselves to have overcome all great vices, and are not yet arrived at a just sense of the many latent corruptions still remaining in them. And this is much increased by all opinions which represent the Deity as implacable towards a part of mankind, and this part as reprobate towards Him. By all which we may see, that every thing which makes disagreeable impressions upon our minds at the same time that our fellow-creatures, or their ideas, are present with us; and especially if these be linked together in the way of cause and effect, or by any such relation, will, in fact, beget in us moroseness and peevishness. This follows from the doctrine of association; and is also an evident fact. It is likewise a strong argument for cheerfulness, and the pleasures of innocent moderate mirth.

Anger and cruelty are the opposites to mercy and compassion; the first, as a sudden start of passion, by which men wish and endeavour harm to others, and rejoice in it when done; which is

revenge: the latter as a more settled habit of mind, disposing men to take a delight in inflicting misery and punishment, and in satiating their thirst after these, by beholding the tortures and anguish of the sufferers.

Anger and revenge may be analysed as follows. The appearance, idea, approach, actual attack, &c. of any thing from which a child has received harm, must raise in his mind, by the law of association, a miniature trace of that harm. The same harm often arises from different causes, and different harms from the same cause: these harms and causes have an affinity with each other: and thus they are variously mixed and connected together, so as that a general confused idea of harm, with the uneasy state of the nervous system, and the consequent activity of the parts, are raised up in young children upon certain appearances and circumstances. By degrees the denial of gratifications, and many intellectual aggregates, with all the signs and tokens of these, raise up a like uneasiness, in the manner before explained. And thus it happens, that when any harm has been received, any gratification denied, or other mental uneasiness occasioned, a long train of associated remainders of painful impressions enhance the displeasure, and continue it much beyond its natural period. This is the nascent state of the passion of anger, in which it is nearly allied to fear, being the continuance of the same internal feelings, quickened, on one hand, by the actual, painful, or uneasy impression, but moderated on the other by the absence of the apprehension of future danger.

By degrees the child learns, from observation and imitation, to use various muscular exertions, words, gestures, &c. in order to ward off or remove the causes of uneasiness or pain, so as to strike, talk loud, threaten, &c. and so goes on multiplying perpetually, by farther and farther associations, both the occasions of anger, and the expressions of it; and particularly associates a desire of hurting another with the apprehension, or the actual receiving, of harm from that other.

As men grow up to adult age, and distinguish living creatures from things inanimate, rational and moral agents from irrational ones, they learn to refer effects to their ultimate causes; and to consider all the intermediate ones as being themselves effects depending on the ultimate cause. And thus their resentment passes from the inanimate instrument to the living agent; and more especially, if the living agent be a rational and moral one. For, first, Living rational agents are alone capable of being restrained by threatenings and punishments from committing the injurious action. All our expressions of anger must therefore be directed against them.—Secondly, Inanimate things are incapable of feeling the harms which anger wishes: the desire of revenge must therefore be entirely confined to animals. And these two things have great influence on each other. Our threatening harm merely from a motive of security, leads us to wish it really;

wishing it leads us to threaten and inflict it, where it can afford no security or advantage to us.—Thirdly, As we improve in observation and experience, and in the faculty of analysing the actions of animals, we perceive that brutes and children, and even adults in certain circumstances, have little or no share in the actions referred to them; but are themselves under the influence of other causes, which therefore are to be deemed the ultimate ones. Hence, our resentment against them must be much abated in these cases, and transferred to the ultimate living cause, usually called the free agent, if so be that we are able to discover him.—Lastly, When the moral ideas of just and unjust, right and wrong, merit and demerit, have been acquired, and applied to the actions and circumstances of human life in the manner to be hereafter described, the internal feelings of this class, *i. e.* the complacency and approbation attending the first, the disgust, disapprobation, and even abhorrence, attending the last, have great influence in moderating or increasing our resentment. The associations of the first kind are at utter variance with those suggested by the sense of pain; of the last, coincide with and strengthen it. And as the rectitude of the moral sense is the highest matter of encomium, men are ashamed not to be thought to submit all their private feelings to its superior authority, and acquiesce in its determinations. And thus, by degrees, all anger and resentment in theory, all that even ill men will attempt to justify, is confined to injury, to sufferings which are not deserved, or which are inflicted by a person who has no right to do it. And this at last makes it so in fact, to a great degree, amongst those who are much influenced by their own moral sense, or by that of others. Yet still, as a confirmation of the foregoing doctrine, it is easy to observe, that many persons are apt to be offended even with stocks and stones, with brutes, with hurts merely accidental and undesigned, and with punishments acknowledged to be justly inflicted; and this in various degrees, according to the various natural and acquired dispositions of their minds.

Cruelty and malice are considered, not as passions of the mind, but as habits, as the deliberate wishing of misery to others, delighting in the view and actual infliction of it, and this without the consideration of injury received or intended. However, it will easily appear that they are the genuine and necessary offspring of anger indulged and gratified. They are most apt to arise in proud, selfish, and timorous persons, those who conceive highly of their own merits, and of the consequent injustice of all offences against them; and who have an exquisite feeling and apprehension, in respect of private gratifications and uneasinesses. The low and unhappy condition of those around a man gives a dignity to his own; and the infliction of punishment, or mere suffering, strikes a terror, and so affords security and authority. Add to these, the pleasures arising from gratifying the will

before explained, and perhaps some from mere curiosity, and the rousing an obdurate callous mind to a state of sensibility. Thus we may perceive how nearly one ill passion is related to another; and that it is possible for men to arrive at last at some degree of pure disinterested cruelty and malice.

The jealousy against a rival in the affections of a beloved person of the other sex; also that peculiar resentment against this beloved person, when suspected to be unfaithful, which goes by the same name; are easily deducible from their sources, in the manner so often repeated. And it is owing to the extraordinary magnitude of the passions and pleasures between the sexes, and the singular contempt and ridicule thrown upon the person despised and deceived, (the last of which springs from the first,) that these two sorts of jealousy rise to such a height. This is more peculiarly remarkable in the southern climates, where the passions between the sexes are more violent than amongst us. The nature and origin of jealousies and suspicions of other kinds, with the affections attending them, may easily be understood from what has been already advanced.

THE AFFECTIONS BY WHICH WE GRIEVE FOR THE HAPPINESS OF OTHERS.

Emulation and envy make the fourth class of the sympathetic affections. These are founded in the desire of pleasures, honours, riches, power, &c. and the consequent engrossing what others desire, losing what they obtain, in a comparison of our own acquisitions with those of others, &c. by which the happiness of others is connected with our misery; so that at last we become uneasy at their happiness, even where there is no such connexion, *i. e.* emulate and envy where our own interest is no ways concerned.

Having now seen, in some measure, the nature and origin of the principal sympathetic affections, pleasing and tormenting, moral and immoral, let us consider the several objects upon which these various and contrary affections are exerted.

I begin with the most intimate of all the relations of life, that of husband and wife. Where this union is cemented by the several pleasures of sensation and imagination before-mentioned, also by those of the moral and religious kinds, hereafter to be described, love, generosity, gratitude, compassion, and all the affections of the first and second class, prevail in the highest degree possible, to the exclusion of all those of the third and fourth class; so that the marriage state, in these cases, affords the most perfect earnest and pattern, of which our imperfect condition here admits, of the future happiness of the good in another world. And it is remarkable, that this state is in Scripture made the emblem of future happiness, and of the union of Christ with the church.

Where the ties of affection are weaker, and particularly where there is a great deficiency in the moral or religious dispositions of either or both the parties, the passions of the third class intermix themselves with those of the first and second; and in many cases, the opposite affections prevail in great degrees alternately, and even at short and frequent intervals. And indeed each kind often becomes more violent from succeeding its opposite.

In very immoral and wicked persons the passions of the third class prevail almost entirely, and that especially where the peculiar affection, called love by young persons, and which springs from the pleasures of sensation, imagination, and ambition, in the manner above explained, was originally weak.

The affection of parents towards children seems to begin from the pain which the mother feels in bringing them into the world, and the sympathetic fears and cares of the father in consequence thereof, and in some degree from children's being supposed to belong to their parents in a very peculiar sense, and being parts of their own bodies. It is increased, especially in mothers, by all the signs of life, sense, and distress, which the helpless tender infant shews; many religious and moral considerations, with the language in which these are expressed, adding also great force thereto. The giving suck in the mother, with all the fears and cares in both parents, increases it still farther, and as the child advances in age and understanding, diverts by his little follies, pleases by his natural beauty, draws on the encomiums of others, surprises by his agility or wit, &c. the affections continue to rise. When the time comes for the cultivation of the moral and religious powers of the mind, these either increase the affection by their proper appearance and growth, or check it by being deficient, and by giving occasion to censures and corrections. Yet even these last, when justly proportioned, and followed by mental improvement, add greatly to the warmth of affection by raising compassion. And thus the remainders of former affections, and the accessions of new ones, seem to make a sum total, which grows perpetually greater in tender and religious parents.

The little affection commonly shewn to bastards agrees very well with the foregoing history of parental affection.

The affection towards grand-children is, in general, the same as that towards children, differing chiefly in this, that it is more fond and tender, and less mixed with severity, and the necessary corrections. This may be, perhaps, because the appearance of the helpless infant, after so long an interval, raises up all the old traces of parental affection with new vigour, from their not having been exerted for some years, and by recalling many of the most moving scenes of the foregoing life; so that these old traces, increased by the addition of new similar ones, make together a greater sum total than before: or, perhaps, because old persons have more experience of pain, sorrow, and infirmity; and so are more disposed to compassion, in the same manner as they

are more apt to weep; and because they excuse themselves from the uneasy task of censuring and reproving.

The affections of children towards their parents are founded in the many pleasures which they receive from them, or in their company. These affections are afterwards increased by their improvement in morality and religion, and by the several common causes of good-will, gratitude, compassion, &c. prevailing here with peculiar force. It seems, however, that the sources of this affection are fewer and weaker than the sources of that towards children; and it is observed in fact, that the affection of children is in general weaker than that of parents. For which also an evident final cause may be assigned. It is to be added farther, that the many engagements and distractions which lay hold of the opening faculties of young persons, upon their entrance into life, have a principal share in this effect.

Friendship, with the bitter enmities that sometimes succeed the breaches of it, and the emulation and envy that are apt to arise in friends, from the equality and similarity of their circumstances, may be easily understood from what has been delivered already.

In like manner we may explain the affections between persons of the same family, brothers, cousins, &c. of the same age, sex, district, education, temper, profession, &c.

By all these artificial ties our good-will and compassion are perpetually extended more and more, growing also perpetually weaker and weaker, in proportion to their diffusion. Yet still the common blessings and calamities, which fall upon whole nations and communities; the general resemblance of the circumstances of all mankind to each other, in their passage through life; their common relation to God as their creator, governor, and father; their common concern in a future life, and in the religion of Christ, &c. are capable of raising strong sympathetic affections towards all mankind, and the several larger divisions of it, in persons of religious dispositions, who duly attend to these things. In like manner the opinions of savageness, barbarity, and cruelty, which ignorant and unexperienced persons are apt to entertain, concerning some distant nations, raise up in their minds some degrees of general dislike, aversion, and hatred.

SECT. V.

THE PLEASURES AND PAINS OF THEOPATHY.

PROP. XCVIII.—*To examine how far the Pleasures and Pains of Theopathy are agreeable to the foregoing Theory.*

UNDER this class I comprehend all those pleasures and pains, which the contemplation of God, and his attributes, and of our relation to him, raises up in the minds of different persons, or in that of the same person, at different times. And in order to speak with more precision concerning this class of affections, and to deduce them more readily from the theory of these papers, it will be proper first to inquire into the idea of God, as it is found in fact amongst men, particularly amongst Jews and Christians, *i. e.* to inquire what associations may be observed in fact to be heaped upon, and concur in this word, and the equivalent and related terms and phrases.

First, then, It is probable, that since many actions and attributes belonging to men are, and indeed must be, in common language, applied to God, children, in their first attempts to decypher the word *God*, will suppose it to stand for a man whom they have never seen, and of whom consequently they form a compound fictitious idea, consisting of parts before generated by men, whom they have seen.

Secondly, When they hear or read, that God resides in heaven, (*i. e.* according to their conceptions, in the sky, amongst the stars,) that he made all things, that he sees, hears, and knows all things, can do all things, &c. with the many particular modes of expression that are comprehended under these general ones, vivid ideas, which surprise and agitate the mind, (lying upon the confines of pain,) are raised in it; and if they be so far advanced in understanding, as to be affected with apparent inconsistencies and impossibilities in their ideas, they must feel great perplexity of imagination, when they endeavour to conceive and form definite ideas agreeable to the language of this kind, which they hear and read. Now this perplexity will add to the vividness of the ideas, and all together will transfer upon the word *God*, and its equivalents, such secondary ideas, as may be referred to the heads of magnificence, astonishment, and reverence.

Thirdly, When children hear that God cannot be seen, having no visible shape, no parts; but that he is a spiritual infinite being; this adds much to their perplexity and astonishment, and by degrees destroys the association of the fictitious visible idea before-mentioned with the word *God*. However, it is probable, that some visible ideas, such as those of the heavens, a fictitious throne placed there, a multitude of angels, &c. still continue to be excited by the word *God*, and its equivalents, when dwelt upon in the mind.

Fourthly, When the child hears, that God is the rewarder of good actions, and the punisher of evil ones, and that the most exquisite future happiness or misery (described by a great variety of particulars and emblems) are prepared by him for the good and bad respectively; he feels strong hopes and fears rise alternately in his mind, according to the judgment which he passes upon his own actions, founded partly upon the previous judgment of others, partly upon an imperfect moral sense begun to be generated in him.

And laying all these things together it will appear, that, amongst Jews and Christians, children begin probably with a definite visible idea of God; but that by degrees this is quite obliterated, without any thing of a stable precise nature succeeding in its room; and that, by farther degrees, a great variety of strong secondary ideas, *i. e.* mental affections, (attended indeed by visible ideas, to which proper words are affixed, as of angels, the general judgment, &c.) recur in their turns, when they think upon God, *i. e.* when this word, or any of its equivalents, or any equivalent phrase or symbol, strike the mind strongly, so that it dwells upon them for a sufficient time, and is affected by them in a sufficient degree.

Amongst heathen nations, where idolatry and polytheism prevail, the case is different; but this difference may easily be understood by applying the foregoing method of reasoning to the circumstances of the heathen world.

I will now inquire more particularly into the nature and origin of the affections exerted towards God. They may be ranked under two general heads, love and fear; agreeably to the general division of the sympathetic affections into benevolence and malevolence. However, the analogy here is not a complete one, as will be seen presently.

To the love of God may be referred gratitude, confidence, and resignation; also enthusiasm, which may be considered as a degeneration of it. To the fear, reverence (which is a mixture of love and fear); also superstition and atheism, which are degenerations of the fear of God.

THE LOVE OF GOD.

The love of God, with its associates, gratitude, confidence, and resignation, is generated by the contemplation of his bounty and benignity to us, and to all his creatures, as these appear from the view of the natural world, the declarations of the Scriptures, or a man's own observation and experience in respect of the events of life. It is supported, and much increased, by the consciousness of upright intentions, and sincere endeavours, with the consequent hope of a future reward, and by prayer vocal and mental, public and private, inasmuch as this gives a reality and force to all the secondary ideas before spoken of. Frequent conversation with devout persons, and frequent reading of devout books, have great

efficacy also, from the infectiousness of our tempers and dispositions, and from the perpetual recurrency of the proper words, and of their secondary ideas; first in a faint state, afterwards in a stronger and stronger perpetually. The contemplation of the rest of the divine attributes, his omnipotence, omniscience, eternity, ubiquity, &c. have also a tendency to support and augment the love of God, when this is so far advanced, as to be superior to the fear; till that time these wonderful attributes enhance the fear so much, as to check the rise and growth of the love for a time. Even the fear itself contributes to the generation and augmentation of the love in an eminent degree, and in a manner greatly analogous to the production of other pleasures from pains. And indeed it seems, that, notwithstanding the variety of ways above-mentioned, in which the love of God is generated, and the consequent variety of the intellectual aggregates, and secondary ideas, there must be so great a resemblance amongst them, that they cannot but languish by frequent recurrency, till such time as ideas of an opposite nature, by intervening at certain seasons, give them new life.

The love of God is, according to this theory, evidently deduced in part from interested motives directly; *viz.* from the hopes of a future reward; and those motives to it, or sources of it, in which direct explicit self-interest does not appear, may yet be analysed up to it ultimately. However, after all the several sources of the love of God have coalesced together, this affection becomes as disinterested as any other; as the pleasure we take in any natural or artificial beauty, in the esteem of others, or even in sensual gratifications.

It appears also, that this pure disinterested love of God may, by the concurrence of a sufficient number of sufficiently strong associations, arise to such a height, as to prevail over any of the other desires interested or disinterested; for all, except the sensual ones, are of a factitious nature, as well as the love of God; and the sensual ones are, in our progress through life, overpowered by them all in their respective turns.

Enthusiasm may be defined a mistaken persuasion in any person, that he is a peculiar favourite with God; and that he receives supernatural marks thereof. The vividness of the ideas of this class easily generates this false persuasion in persons of strong fancies, little experience in divine things, and narrow understandings, (and especially where the moral sense, and the scrupulosity attending its growth and improvement, are but imperfectly formed,) by giving a reality and certainty to all the reveries of a man's own mind, and cementing the associations in a preternatural manner. It may also be easily contracted by contagion, as daily experience shews; and indeed more easily than most other dispositions, from the glaring language used by enthusiasts, and from the great flattery and support, which enthusiasm affords to pride and self-conceit.

THE FEAR OF GOD.

The fear of God arises from a view of the evils of life, from the threatenings of the Scriptures, from the sense of guilt, from the infinity of all God's attributes, from prayer, meditation, reading, and conversation upon these and such like subjects, in a manner analogous to the love of God. When confined within certain limits, and especially when tempered with love, so as to become awe, veneration, and reverence, it remains in a natural state, *i. e.* suits our other circumstances; and, as before observed, has a considerable share in generating the love of God. When excessive, or not duly regarded, it degenerates either into superstition or atheism.

Superstition may be defined a mistaken opinion concerning the severity and punishments of God, magnifying these in respect of ourselves or others. It may arise from a sense of guilt, from bodily indisposition, from erroneous reasoning, &c. That which arises from the first cause, has a tendency to remove itself by regulating the person's behaviour, and consequently lessening his sense of guilt. The other kinds often increase for a time, come to their height at last, and then decline again. They do also, in some cases, increase without limits during life. All kinds of superstition have been productive of great absurdities in divine worship, both amongst Pagans, and amongst Jews and Christians; and they have all a great tendency to sour the mind, to check natural benevolence and compassion, and to generate a bitter persecuting spirit. All which is much augmented where superstition and enthusiasm pass alternately into each other at intervals; which is no uncommon case.

Under atheism I here comprehend not only the speculative kind, but the practical, or that neglect of God, where the person thinks of him seldom, and with reluctance, and pays little or no regard to him in his actions, though he does not deny him in words. Both kinds seem in christian countries, where reasonable satisfaction in religious matters is easy to be had by all well-disposed minds, and gross ignorance uncommon except in ill-disposed ones, to proceed from an explicit or implicit sense of guilt, and a consequent fear of God, sufficient to generate an aversion to the thoughts of him, and to the methods by which the love might be generated, and yet too feeble to restrain from guilt; so that they may properly be considered as degenerations of the fear of God. What has been delivered already in these papers, concerning the connexion of fear, aversion, and the other uneasy passions, with each other, and also of the tendency of all pain to prevent the recurrency of the circumstances by which it is introduced, may afford some light here.

It appears upon the whole, that the theopathic affections are, in some things, analogous to the sympathetic ones, as well as

different in others; and that this difference arises chiefly from the infinity and absolute perfection of the divine nature.

Affections of an intermediate kind are generated in respect of good and evil beings of an invisible nature, and of an order superior to us (such as angels and devils); whose origin and growth will easily be understood from what is here delivered.

SECT. VI.

THE PLEASURES AND PAINS OF THE MORAL SENSE.

PROP. XCIX.—*To examine how far the Pleasures and Pains of the Moral Sense are agreeable to the foregoing Theory.*

THERE are certain tempers of mind, with the actions flowing from them, as of piety, humility, resignation, gratitude, &c. towards God; of benevolence, charity, generosity, compassion, humility, gratitude, &c. towards men; of temperance, patience, contentment, &c. in respect of a person's own private enjoyments or sufferings; which when he believes himself to be possessed of, and reflects upon, a pleasing consciousness and self-approbation rise up in his mind, exclusively of any direct explicit consideration of advantage likely to accrue to himself, from his possession of these good qualities. In like manner the view of them in others raises up a disinterested love and esteem for these others. And the opposite qualities of impiety, profaneness, uncharitableness, resentment, cruelty, envy, ingratitude, intemperance, lewdness, selfishness, &c. are attended with the condemnation both of ourselves and others. This is, in general, the state of the case; but there are many particular differences, according to the particular education, temper, profession, sex, &c. of each person.

Or, which is the same thing, the secondary ideas belonging to virtue and vice, duty and sin, innocence and guilt, merit and demerit, right and wrong, moral good and moral evil, just and unjust, fit and unfit, obligation and prohibition, &c. in one man, bear a great resemblance to those belonging to the same words in another, or to the corresponding words, if they have different languages; and yet do not exactly coincide, but differ more or less, according to the difference in education, temper, &c.

Now both this general resemblance, and these particular differences, in our ideas, and consequent approbation or disapprobation, seem to admit of an analysis and explanation from the following particulars.

First, Children are, for the most part, instructed in the difference and opposition between virtue and vice, duty and sin, &c.;

and have some general descriptions of the virtues and vices inculcated upon them. They are told, that the first are good, pleasant, beautiful, noble, fit, worthy of praise and reward, &c.; the last odious, painful, shameful, worthy of punishment, &c.; so that the pleasing and displeasing associations previously annexed to these words in their minds, are, by means of that confidence which they place in their superiors, transferred upon the virtues and vices respectively. And the mutual intercourses of life have the same effect in a less degree, with respect to adults, and those children who receive little or no instruction from their parents or superiors. Virtue is in general approved, and set off by all the encomiums, and honourable appellations, that any other thing admits of, and vice loaded with censures and reproaches of all kinds, in all good conversation and books. And this happens oftener than the contrary, even in bad ones; so that as far as men are influenced in their judgments by those of others, the balance is, upon the whole, on the side of virtue.

Secondly, There are many immediate good consequences, which attend upon virtue, as many ill ones do upon vice, and that during our whole progress through life. Sensuality and intemperance subject men to diseases and pain, to shame, deformity, filthiness, terrors, and anxieties; whereas temperance is attended with ease of body, freedom of spirits, the capacity of being pleased with the objects of pleasure, the good opinion of others, the perfection of the senses, and of the faculties, bodily and mental, long life, plenty, &c. Anger, malice, envy, bring upon us the returns of anger, malice, envy, from others, with injuries, reproaches, fears, and perpetual disquietude; and, in like manner, good-will, generosity, compassion, are rewarded with returns of the same, with the pleasures of sociality and friendship, with good offices, and with the highest encomiums. And when a person becomes properly qualified, by the previous love of his neighbour, to love God, to hope and trust in him, and to worship him in any measure as he ought to do, this affords the sincerest joy and comfort; as, on the contrary, the neglect of God, or practical atheism, the murmuring against the course of providence, sceptical unsettledness, and fool-hardy impiety, are evidently attended with great anxieties, gloominess, and distraction, as long as there are any traces of morality or religion left upon men's minds. Now these pleasures and pains, by often recurring in various combinations, and by being variously transferred upon each other, from the great affinity between the several virtues, and their rewards, with each other; also between the several vices, and their punishments, with each other; will at last beget in us a general, mixed, pleasing idea and consciousness, when we reflect upon our own virtuous affections or actions; a sense of guilt, and an anxiety, when we reflect on the contrary; and also raise in us the love and esteem of virtue, and the hatred of vice in others.

Thirdly, The many benefits which we receive immediately from, or which have some evident, though distant, connexion with the piety, benevolence, and temperance of others; also the contrary mischiefs from their vices; lead us first to the love and hatred of the persons themselves by association, as explained under the head of sympathy, and then by farther associations to the love and hatred of the virtues and vices, considered abstractedly, and without any regard to our own interest; and that whether we view them in ourselves or others. As our love and esteem for virtue in others is much increased by the pleasing consciousness, which our own practice of it affords to ourselves, so the pleasure of this consciousness is much increased by our love of virtue in others.

Fourthly, The great suitableness of all the virtues to each other, and to the beauty, order, and perfection of the world, animate and inanimate, impresses a very lovely character upon virtue; and the contrary self-contradiction, deformity, and mischievous tendency of vice, render it odious, and matter of abhorrence to all persons that reflect upon these things; and beget a language of this kind, which is borrowed, in great measure, from the pleasures and pains of imagination, and applied with a peculiar force and fitness to this subject from its great importance.

Fifthly, The hopes and fears which arise from the consideration of a future state, are themselves pleasures and pains of a high nature. When, therefore, a sufficient foundation has been laid by a practical belief of religion, natural and revealed, by the frequent view of, and meditation upon, death, by the loss of departed friends, by bodily pains, by worldly disappointments and afflictions, for forming strong associations of the pleasures of these hopes with duty, and the pains of these fears with sin, the reiterated impressions of those associations will at last make duty itself a pleasure, and convert sin into a pain, giving a lustre and deformity respectively to all their appellations; and that without any express recollection of the hopes and fears of another world, just as in other cases of association.

Sixthly, All meditations upon God, who is the inexhaustible fountain, and infinite abyss, of all perfection, both natural and moral; also all the kinds of prayer, *i. e.* all the ways of expressing our love, hope, trust, resignation, gratitude, reverence, fear, desire, &c. towards him; transfer, by association, all the perfection, greatness, and gloriousness of his natural attributes upon his moral ones, *i. e.* upon moral rectitude. We shall by this means learn to be merciful, holy, and perfect, because God is so; and to love mercy, holiness, and perfection, wherever we see them.

And thus we may perceive, that all the pleasures and pains of sensation, imagination, ambition, self-interest, sympathy, and theopathy, as far as they are consistent with one another, with the frame of our natures, and with the course of the world, beget

in us a moral sense, and lead us to the love and approbation of virtue, and to the fear, hatred, and abhorrence of vice. This moral sense therefore carries its own authority with it, inasmuch as it is the sum total of all the rest, and the ultimate result from them; and employs the force and authority of the whole nature of man against any particular part of it, that rebels against the determinations and commands of the conscience or moral judgment.

It appears also, that the moral sense carries us perpetually to the pure love of God, as our highest and ultimate perfection, our end, centre, and only resting-place, to which yet we can never attain.

When the moral sense is advanced to considerable perfection, a person may be made to love and hate, merely because he ought; *i. e.* the pleasures of moral beauty and rectitude, and the pains of moral deformity and unfitness, may be transferred, and made to coalesce, almost instantaneously.

Scrupulosity may be considered as a degeneration of the moral sense, resembling that by which the fear of God passes into superstition; for it arises, like this, from a consciousness of guilt, explicit or implicit, from bodily indisposition, and from an erroneous method of reasoning. It has also a most intimate connexion with superstition (just as moral rectitude has with the true love and fear of God:) and, like superstition, it is, in many cases, observed to work its own cure by rectifying what is amiss; and so by degrees removing both the explicit and implicit consciousness of guilt. It seems also, that in this imperfect state men seldom arrive at any great degree of correctness in their actions without some previous scrupulosity, by which they may be led to estimate the nature and consequences of affections and actions with care, impartiality, and exactness.

The moral sense or judgment here spoken of is sometimes considered as an instinct, sometimes as determinations of the mind, grounded on the eternal reasons and relations of things. Those who maintain either of these opinions may, perhaps, explain them so as to be consistent with the foregoing analysis of the moral sense from association. But if by instinct be meant a disposition communicated to the brain, and in consequence of this, to the mind, or to the mind alone, so as to be quite independent of association; and by a moral instinct, such a disposition producing in us moral judgments concerning affections and actions; it will be necessary, in order to support the opinion of a moral instinct, to produce instances, where moral judgments arise in us, independently of prior associations determining thereto.

In like manner, if by founding the morality of actions, and our judgment concerning this morality, on the eternal reasons and relations of things, be meant, that the reasons drawn from the relations of things, by which the morality or immorality of certain actions is commonly proved, and which, with the relations,

are called eternal, from their appearing the same, or nearly the same, to the mind at all times, would determine the mind to form the corresponding moral judgment independently of prior associations, this ought also to be proved by the allegation of proper instances. To me it appears, that the instances are, as far as we can judge of them, of an opposite nature, and favour the deduction of all our moral judgments, approbations, and disapprobations, from association alone. However, some associations are formed so early, repeated so often, rivetted so strong, and have so close a connexion with the common nature of man, and the events of life which happen to all, as, in a popular way of speaking, to claim the appellation of original and natural dispositions; and to appear like instincts when compared with dispositions evidently factitious; also like axioms, and intuitive propositions, eternally true according to the usual phrase, when compared with moral reasonings of a compound kind. But I have endeavoured to shew in these papers, that all reasoning, as well as affection, is the mere result of association.

CONCLUSION :

CONTAINING SOME REMARKS ON THE MECHANISM OF THE HUMAN MIND.

BESIDES the consequences flowing from the doctrine of association, which are delivered in the corollaries to the fourteenth proposition, there is another, which is thought by many to have a pernicious tendency in respect of morality and religion; and which therefore it will be proper that I should consider particularly.

The consequence I mean is that of the mechanism or necessity of human actions, in opposition to what is generally termed free-will. Here then I will,

First, State my notion of the mechanism or necessity of human actions.

Secondly, Give such reasons as induce me to embrace the opinion of the mechanism of human actions.

Thirdly, Consider the objections and difficulties attending this opinion.

And, lastly, Allege some presumptions in favour of it from its consequences.

By the mechanism of human actions I mean, that each action results from the previous circumstances of body and mind, in the same manner, and with the same certainty, as other effects do

from their mechanical causes; so that a person cannot do indifferently either of the actions *A*, and its contrary *a*, while the previous circumstances are the same; but is under an absolute necessity of doing one of them, and that only. Agreeably to this I suppose, that by free-will is meant a power of doing either the action *A*, or its contrary *a*; while the previous circumstances remain the same.

If by free-will be meant a power of beginning motion, this will come to the same thing; since, according to the opinion of mechanism, as here explained, man has no such power; but every action, or bodily motion, arises from previous circumstances, or bodily motions, already existing in the brain, *i. e.* from vibrations, which are either the immediate effect of impressions then made, or the remote compound effect of former impressions, or both.

But if by free-will be meant any thing different from these two definitions of it, it may not perhaps be inconsistent with the mechanism of the mind here laid down. Thus, if free-will be defined the power of doing what a person desires or wills to do, of deliberating, suspending, choosing, &c. or of resisting the motives of sensuality, ambition, resentment, &c. Free-will, under certain limitations, is not only consistent with the doctrine of mechanism, but even flows from it; since it appears from the foregoing theory, that voluntary and semi-voluntary powers of calling up ideas, of exciting and restraining affections, and of performing and suspending actions, arise from the mechanism of our natures. This may be called free-will in the popular and practical sense, in contradistinction to that which is opposed to mechanism, and which may be called free-will in the philosophical sense.

I proceed now to the arguments which favour the opinion of mechanism.

First, then, it is evident to, and allowed by all, that the actions of mankind proceed, in many cases, from motives, *i. e.* from the influence which the pleasures and pains of sensation, imagination, ambition, self-interest, sympathy, theopathy, and the moral sense, have over them. And these motives seem to act like all other causes. When the motive is strong, the action is performed with vigour; when weak, feebly. When a contrary motive intervenes, it checks or over-rules, in proportion to its relative strength, as far as one can judge. So that where the motives are the same, the actions cannot be different; where the motives are different, the actions cannot be the same. And it is matter of common observation, that this is the case in fact, in the principal actions of life, and such where the motives are of a magnitude sufficient to be evident. It is reasonable therefore to interpret the obscure cases by the evident ones; and to infer, that there are in all instances motives of a proper kind and degree, which generate each action; though they are sometimes not seen through their

minuteness, or through the inattention or ignorance of the observer. Agreeably to which, those persons, who study the causes and motives of human actions, may decypher them much more completely, both in themselves, and those with whom they converse, than others can.

Suppose now a person able to decypher all his own actions in this way, so as to shew that they corresponded in kind and degree to the motives arising from the seven classes of pleasures and pains considered in this theory; also able to decypher the principal actions of others in the same way: this would be as good evidence, that motives were the mechanical causes of actions, as natural phænomena are for the mechanical operation of heat, diet, or medicines. Or if he could not proceed so far, but was able only to decypher most of his own actions, and many of the principal ones of others, still the evidence would scarce be diminished thereby, if the deficiency was no more than is reasonably to be expected from our ignorance and inattention, in respect to ourselves and others. Let the reader make the trial, especially upon himself, since such a self-examination cannot but be profitable, and may perhaps be pleasant; and that either according to the seven classes of pleasures and pains here laid down, or any other division, and judge as he thinks fit upon mature deliberation.

It may be of use in such an inquiry into a man's self, as I here propose, for him to consider in a short time after any material action is past, whether, if he was once more put into the same rigidly exact circumstances, he could possibly do otherwise than as he did. Here the power of imagination will intervene, and be apt to deceive the inquirer, unless he be cautious. For in this review, other motives, besides those which did actually influence him, will start up; and that especially if the action be such as he wishes to have been performed with more vigour or less, or not to have been performed at all. But when these foreign motives are set aside, and the imagination confined to those which did in fact take place, it will appear impossible, as it seems to me, that the person should have done otherwise than the very thing which he did.

Secondly, According to the theory here laid down, all human actions proceed from vibrations in the nerves of the muscles, and these from others, which are either evidently of a mechanical nature, as in the automatic motions; or else have been shewn to be so in the account given of the voluntary motions.

And if the doctrine of vibrations be rejected, and sensation and muscular motion be supposed to be performed by some other kind of motion in the nervous parts; still it seems probable, that the same method of reasoning might be applied to this other kind of motion.

Lastly, To suppose, that the action *A*, or its contrary *a*, can equally follow previous circumstances, that are exactly the same,

appears to me the same thing, as affirming that one or both of them might start up into being without any cause; which, if admitted, appears to me to destroy the foundation of all general abstract reasoning; and particularly of that whereby the existence of the First Cause is proved.

One of the principal objections to the opinion of mechanism is that deduced from the existence of the moral sense, whose history I have just given. But it appears from that history, that God has so formed the world, and perhaps (with reverence be it spoken) was obliged by his moral perfections so to form it, as that virtue must have amiable and pleasing ideas affixed to it; vice, odious ones. The moral sense is therefore generated necessarily and mechanically. And it remains to be inquired, whether the amiable and odious ideas above shewed to be necessarily affixed to virtue and vice respectively, though differently, according to the different events of each person's life, do not answer all the purposes of making us ultimately happy in the love of God, and of our neighbour; and whether they are not, *cæteris paribus*, the same entirely, or at least in all material respects, in those who believe mechanism, who believe free-will, and who have not entered into the discussion of the question at all; or if there be a difference, whether the associations arising from the opinion of necessity, do not tend more to accelerate us in our progress to the love of God, our only true happiness. It appears to me, that the difference is in general very small; also that this difference, whatever it be, is of such a nature as to be a presumption in favour of the doctrine of necessity, all things being duly considered.

When a person first changes his opinion from free-will to mechanism, or, more properly, first sees part of the mechanism of the mind, and believes the rest from analogy, he is just as much affected by his wonted pleasures and pains, hopes and fears, as before, by the moral and religious ones, as by others. And the being persuaded, that certain things have a necessary influence to change his mind for the better or the worse, *i. e.* so as to receive more sensible, sympathetic, religious pleasures, or otherwise, will force him still more strongly upon the right method, *i. e.* put him upon inquiring after and pursuing this method.

If it be objected, That the moral sense supposes, that we refer actions to ourselves and others, whereas the opinion of mechanism annihilates all those associations, by which we refer actions to ourselves or others; I answer, that it does this just as the belief of the reality and infinite value of the things of another world annihilates all the regards of this world. Both have a tendency to these respective ends, which are indeed one and the same at the bottom; but both require time, in order to produce their full effects. When religion has made any one indifferent to this world, its pleasures and pains, then the kingdom of God, or pure unmixed happiness, comes in respect of him; so that he may then well refer all to God. However, a man may be

thoroughly satisfied in a cool deliberate way, that honours, riches, &c. can afford no solid happiness; and yet desire them at certain times, eagerly perhaps, from former associations. But such a thorough general conviction applied previously to the particular instances, is a great help in a time of temptation, and will gradually destroy the wrong associations. In like manner, the opinion that God is the one only cause of all things, has a tendency to beget the most absolute resignation, and must be a great support in grievous trials and sufferings.

We may shew by a like method of reasoning, that the affections of gratitude and resentment, which are intimately connected with the moral sense, remain notwithstanding the doctrine of mechanism. For it appears from the account of resentment above delivered, that this, and by consequence gratitude, in their nascent state, are equally exerted towards all things, animate and inanimate, that are equally connected with pleasure and pain. By degrees all succeeding circumstances are left out, and our love and hatred confined to preceding ones, which we consider as the only causes. We then leave out inanimate objects entirely, brutes and children in most circumstances, and adults in some. All which is chiefly done, because acknowledgments, rewards, threatenings, and punishments, with the other associated circumstances of gratitude and resentment, can have no use but with respect to living intelligent beings. By farther degrees we learn such a use of the words cause and effect as to call nothing a cause, whose cause, or preceding circumstance, we can see, denominating all such things mere effects, all others causes. And thus, because the secret springs of action in men are frequently concealed, both from the by-stander, and even from the agent himself, or not attended to, we consider men in certain circumstances as real causes; and intelligent beings as the only ones that can be real causes; and thus confine our gratitude and resentment to them: whence it seems to follow, that as soon as we discover created intelligent beings not to be real causes, we should cease to make them the objects either of gratitude or resentment. But this is, in great measure, speculation; for it will appear to every attentive person, that benevolence, compassion, &c. are amiable, and the objects of gratitude, envy, and malice, the contrary, from whatever causes they proceed; *i. e.* he will find his mind so formed already by association, that he cannot withhold his gratitude or resentment: and it has been my business in the foregoing analysis of the affections, to point out the several methods by which this and such like things are brought about. And, for the same reasons, a person must ascribe merit and demerit, which are also intimately connected with the moral sense, to created intelligent beings, though he may have a full persuasion, that they are not real causes.

It does indeed appear, that this is owing to our present imperfect state, in which we begin with the idolatry of the creature,

with the worship of every associated circumstance; and that as we advance in perfection, the associations relating to the one only, Ultimate, Infinite Cause, must at last overpower all the rest; that we shall pay no regards but to God alone; and that all resentment, demerit, sin, and misery, will be utterly annihilated and absorbed by his infinite happiness and perfections. For our associations being in this, as in many other cases, inconsistent with each other, our first gross and transitory ones must yield to those which succeed and remain.

While any degree of resentment, or displeasing affection, is left, it may be shewn, that the same associations which keep it up, will turn it upon the creatures, and particularly upon ourselves. And, on the other hand, when the consideration of the Ultimate Cause seems ready to turn it from ourselves, it will also shew that it ought to be annihilated.

These may be considered as general remarks, tending to remove the difficulties arising from the consideration of the moral sense. I will now state the principal objections to the opinion of mechanism, in a direct, but short way, adding such hints as appear to me to afford a solution of them.

First, then, It may be said, that a man may prove his own free-will by internal feeling. This is true, if by free-will be meant the power of doing what a man wills or desires; or of resisting the motives of sensuality, ambition, &c. *i. e.* free-will in the popular and practical sense. Every person may easily recollect instances, where he has done these several things. But then these are entirely foreign to the present question. To prove that a man has free-will in the sense opposite to mechanism, he ought to feel that he can do different things, while the motives remain precisely the same: and here I apprehend the internal feelings are entirely against free-will, where the motives are of a sufficient magnitude to be evident; where they are not, nothing can be proved.

Secondly, It may be said, that unless a man have free-will, he is not an agent. I answer, that this is true, if agency be so defined as to include free-will. But if agency have its sense determined, like other words, from the associated appearances, the objection falls at once. A man may speak, handle, love, fear, &c. entirely by mechanism.

Thirdly, It may be said, that the denial of free-will in man is the denial of it in God also. But to this it may be answered, that one does not know how to put the question in respect of God, supposing free-will to mean the power of doing different things, the previous circumstances remaining the same, without gross anthropomorphism. It does not at all follow, however, because man is subject to a necessity ordained by God, that God is subject to a prior necessity. On the contrary, according to the doctrine of mechanism, God is the cause of causes, the one only source of all power.

Fourthly, It may be said, that men are perpetually imposed upon, unless they have free-will, since they think they have. But here again free-will is put for the power of doing what a man wills or desires, &c. for, in the sense opposite to mechanism, few persons have ever entered into the discussion of the point at all; and those who do with sufficient attention, cannot but determine against free-will, as it seems to me.

Fifthly, It may be said, that the doctrine of mechanism destroys the notion of a particular providence altering the course of nature so as to suit it to the actions of men. I answer, that laying down philosophical free-will, such an alteration in the course of nature may perhaps be necessary. But if man's actions, and the course of nature, be both fixed, they may be suited to each other in the best possible manner; which is all that can be required, in order to vindicate God's attributes, as well as all that man can desire.

Sixthly, It may be said, that all motives to good actions, and particularly to prayer, are taken away by denying free-will. I answer, that according to the mechanical system, prayer and good actions are the means for obtaining happiness; and that the belief of this is the strongest of motives to impel men to prayer and good works.

Seventhly, It may be said, that the denial of free-will destroys the distinction between virtue and vice. I answer, that this is according as these words are defined. If free-will be included in the definition of virtue, then there can be no virtue without free-will. But if virtue be defined obedience to the will of God, a course of action proceeding from the love of God, or from benevolence, &c. free-will is not at all necessary; since these affections and actions may be brought about mechanically.

A solution analogous to this may be given to the objection taken from the notions of merit and demerit. Let the words be defined, and they will either include free-will, or, not including it, will not require it; so that the proposition, *merit implies free-will*, will either be identical, or false.

Eighthly, It may be said, that the doctrine of mechanism makes God the author of sin. I answer, that till we arrive at self-annihilation, sin always will, and ought to, appear to arise from ourselves; and that, when we are arrived thither, sin and evil of every kind vanish. I answer also, that the doctrine of philosophical free-will does not remove our difficulties and perplexities, in respect of the moral attributes of God, unless by transferring them upon the natural ones; *i. e.* by our supposing that some prior necessity compelled God to bestow free-will on his creatures. It seems equally difficult, in every way, to account for the origin of evil, natural or moral, consistently with the infinity of the power, knowledge, and goodness of God. If we suppose that all tends to happiness ultimately, this removes the difficulty so far as to produce acquiescence in the will of God,

and thankfulness to him; and that just as much upon the system of mechanism as that of free-will. Moral evil has no difficulty in it, besides what arises from the natural evil attending it.

Ninthly, It may be said, that the exhortations of the Scriptures pre-suppose free-will. I answer, that they are to be considered as motives impelling the will, and contributing, as far as they are attended to, to rectify it. A parent who believes the doctrine of mechanism may, consistently with it, or rather must necessarily, in consequence of this belief, exhort his child. Therefore God, who is pleased to call himself our heavenly father, may do the same. And if we embrace the opinion of universal restoration, then all the exhortations contained both in the word and works of God, will produce their genuine effect, and concur to work in us dispositions fit to receive happiness ultimately.

I come now to hint some consequences of the doctrine of mechanism, which seem to me to be strong presumptions in its favour.

First, then, It entirely removes the great difficulty of reconciling the prescience of God with the free-will of man. For it takes away philosophical free-will, and the practical is consistent with God's prescience.

Secondly, It has a tendency to beget the most profound humility and self-annihilation; since, according to this, we are entirely destitute of all power and perfection in ourselves, and are what we are entirely by the grace and goodness of God.

Thirdly, It has a tendency to abate all resentment against men. Since all that they do against us is by the appointment of God, it is rebellion against him to be offended with them.

Fourthly, It greatly favours the doctrine of universal restoration. Since all that is done is by the appointment of God, it cannot but end well at last.

Fifthly, It has a tendency to make us labour more earnestly with ourselves and others, particularly children, from the greater certainty attending all endeavours that operate in a mechanical way.

Lastly, There are many well-known passages of Scripture, which cannot be reconciled to the doctrine of philosophical free-will, without the greatest harshness of interpretation.

It may also be objected to the whole foregoing theory, as well as to the doctrine of vibrations in particular, that it is unfavourable to the immateriality of the soul; and, by consequence, to its immortality. But to this I answer, that I am reduced to the necessity of making a *postulatum* at the entrance of my inquiries; which precludes all possibility of proving the materiality of the soul from this theory afterwards. Thus I suppose, or postulate, in my first proposition, that sensations arise in the soul from motions excited in the medullary substance of the brain. I do indeed bring some arguments from physiology and pathology,

to shew this to be a reasonable *postulatum*, when understood in a general sense; for it is all one to the purpose of the foregoing theory, whether the motions in the medullary substance be the physical cause of the sensations, according to the system of the schools; or the occasional cause, according to Malbranche; or only an adjunct, according to Leibnitz. However, this is not supposing matter to be endued with sensation, or any way explaining what the soul is; but only taking its existence and connexion with the bodily organs in the most simple case, for granted, in order to make farther inquiries. Agreeably to which I immediately proceed to determine the species of the motion, and by determining it, to cast light on some important and obscure points relating to the connexion between the body and the soul in complex cases.

It does indeed follow from this theory, that matter, if it could be endued with the most simple kinds of sensation, might also arrive at all that intelligence of which the human mind is possessed: whence this theory must be allowed to overturn all the arguments which are usually brought for the immateriality of the soul from the subtlety of the internal senses, and of the rational faculty. But I no ways presume to determine whether matter can be endued with sensation or no. This is a point foreign to the purpose of my inquiries. It is sufficient for me, that there is a certain connexion, of one kind or other, between the sensations of the soul, and the motions excited in the medullary substance of the brain; which is what all physicians and philosophers allow.

I would not therefore be any way interpreted so as to oppose the immateriality of the soul. On the contrary, I see clearly, and acknowledge readily, that matter and motion, however subtly divided, or reasoned upon, yield nothing more than matter and motion still. But then neither would I affirm, that this consideration affords a proof of the soul's immateriality. In like manner the unity of consciousness seems to me an inconclusive argument. For consciousness is a mental perception; and if perception be a monad, then every inseparable adjunct of it must be so too, *i. e.* vibrations, according to this theory, which is evidently false. Not to mention, that it is difficult to know what is meant by the unity of consciousness.

But it is most worthy of notice, that the immateriality of the soul has little or no connexion with its immortality; and that we ought to depend upon Him who first breathed into man the breath of the present life, for our resurrection to a better. All live unto him. And if we depend upon any thing else besides him, for any blessing, we may be said so far to renounce our allegiance to him, and to idolize that upon which we depend.

OBSERVATIONS ON MAN,

&c. &c.

PART II.

OBSERVATIONS ON THE DUTY AND EXPECTATIONS OF MANKIND.

INTRODUCTION.

WHATEVER be our doubts, fears, or anxieties, whether self^h or social, whether for time or eternity, our only hope and refuge must be in the infinite power, knowledge, and goodness of God. And if these be really our hope and refuge, if we have a true practical sense and conviction of God's infinite ability and readiness to protect and bless us, an entire, peaceful, happy resignation will be the result, notwithstanding the clouds and perplexities wherewith we may sometimes be encompassed. He who has brought us into this state, will conduct us through it: he knows all our wants and distresses: his infinite nature will bear down all opposition from our impotence, ignorance, vice, or misery: he is our Creator, Judge, and King; our Friend, and Father, and God.

And though the transcendent greatness and gloriousness of this prospect may, at first view, make our faith stagger, and incline us to disbelieve through joy; yet, upon farther consideration, it seems rather to confirm and establish itself on that account; for the more it exceeds our gratitude and comprehension, the more does it coincide with the idea of that absolutely perfect Being, whom the several orders of imperfect beings perpetually suggest to us, as our only resting-place, the cause of causes, and the supreme reality.

However, on the other hand, it must be acknowledged, that the evils which we see and feel are strong arguments of the possibility of still greater evils, of any finite evils whatever, and of their consistency with the divine attributes. All finites are

equally nothing in respect of infinite; and if the infinite power, knowledge, and goodness of God can permit the least evil, they may permit any finite degree of it, how great soever, for any thing that we know to the contrary. And this most alarming consideration cannot but compel every thinking person to use his utmost endeavours, first for his own preservation and deliverance; and then, in proportion to his benevolence, for the preservation and deliverance of others.

Nor can such a person long hesitate what method to take in the general. The duties of piety, benevolence, and self-government, considered in the general, have had such a stamp set upon them by all ages and nations, by all orders and conditions of men, approve themselves so much to our frame and constitution, and are so evidently conducive to both public and private happiness here, that one cannot doubt of their procuring for us not only security, but our *summum bonum*, our greatest possible happiness, during the whole course of our existence, whatever that may be.

These are the genuine dictates of what is called natural religion. But we, who live in Christian countries, may have recourse to far clearer light, and to a more definite rule: the Christian revelation is attested by such evidences historical, prophetic, and moral, as will give abundant comfort and satisfaction to all who seek them earnestly. A future life, with indefinite or even infinite rewards and punishments, is set before us in express terms, the conditions declared, examples related both to encourage our hopes, and alarm our fears, and assurances of assistance and mercy delivered in the strongest and most pathetic terms.

Yet still there are difficulties both in the word of God, and in his works; and these difficulties are sometimes so magnified, as to lead to scepticism, infidelity, or atheism. Now, the contemplation of our own frame and constitution appears to me to have a peculiar tendency to lessen these difficulties attending natural and revealed religion, and to improve their evidences, as well as concur with them in their determination of man's duty and expectations. With this view, I drew up the foregoing observations on the frame and connexion of the body and mind; and, in prosecution of the same design, I now propose,

First, To proceed upon this foundation, and upon the other phenomena of nature, to deduce the evidences for the being and attributes of God, and the general truths of natural religion.

Secondly, Laying down all these as a new foundation, to deduce the evidences for revealed religion.

Thirdly, To inquire into the rule of life, and the particular applications of it, which result from the frame of our natures, the dictates of natural religion, and the precepts of the Scriptures taken together, compared with, and casting light upon, each other. And,

Fourthly, To inquire into the genuine doctrines of natural and revealed religion thus illustrated, concerning the expectations of mankind, here and hereafter, in consequence of their observance or violation of the rule of life.

I do not presume to give a complete treatise on any of these subjects; but only to borrow from the many excellent writings, which have been offered to the world on them, some of the principal evidences and deductions, and to accommodate them to the foregoing theory of the mind; whereby it may appear, that though the doctrines of association and mechanism do make some alterations in the method of reasoning on religion, yet they are far from lessening either the evidences for it, the comfort and joy of religious persons, or the fears of irreligious ones.

CHAP. I.

OF THE BEING AND ATTRIBUTES OF GOD, AND OF NATURAL RELIGION.

PROP. I.—*Something must have existed from all Eternity, or, there never was a Time when nothing existed.*

FOR, when we place ourselves in such an imaginary point of time, and then try to conceive how a world, finite or infinite, should begin to exist, absolutely without cause, we find an instantaneous and irresistible check put to the conception, and we are compelled at once to reject the supposition: so that the manner in which we reject it, is a proper authority for doing so. It is superfluous, in this case, to inquire into the nature of this check and rejection, and dissent grounded thereon; since, after all our inquiries, we must still find an insuperable reluctance to assent. The supposition will not remain in the mind, but is thrown out immediately; and I do not speak of this, as what ought to follow from a proper theory of evidence and assent, but as a fact, which every man feels, whatever his notions of logic be, or whether he has any or none; and I appeal to every man for the truth of this fact. Now, no truth can have a greater reality to us, nor any falsehood a greater evidence against it, than this instantaneous, necessary assent or dissent. I conclude, therefore, that there never was a time when nothing existed; or, in other words, that something must have existed from all eternity.

PROP. II.—*There cannot have been a mere Succession of finite dependent Beings from all Eternity; but there must exist, at least, one infinite and independent Being.*

If an infinite succession of finite dependent beings be possible, let *M*, *N*, *O*, &c. represent the several links of this chain or series; *N* is therefore the mere effect of *M*, *O* of *N*, &c. as we descend; and as we ascend, *M* is the effect of *L*, *L* of *K*, &c. Each particular being, therefore, is a mere effect; and, therefore, the supposition of such a succession finite *à parte ante* would be rejected immediately according to the last proposition,

since *A*, the first term, would be an effect absolutely without a cause, and the same thing holds, whatever number of terms be added *à parte ante*. If, therefore, an infinite number be added, (which I here suppose possible for argument's sake,) so that the series may become infinite *à parte ante*, the same conclusion must be valid according to the analogy of all mathematical reasonings concerning infinites: since we do not approach to the possibility of the series in any step of our progress, but always remain in the same state of utter inability to admit it, we can never arrive thither ultimately. Wherever the ultimate ratio of quantities, supposed then to be infinitely great or small, is different from that of the same quantities supposed to be finite, there is a perpetual tendency to this ultimate ratio in every increase or diminution of the quantities: it follows, therefore, that an infinite succession of mere finite dependent beings is impossible to us; which relative impossibility, as I observed before, is our *Ne plus ultra*. Though we should fancy relative impossibles to be possible *in themselves*, as it is sometimes phrased, the utter rejection, which forces itself again and again upon the mind, when we endeavour to conceive them so, suppresses all nascent tendencies to assent.

The same thing may be considered thus: If there be nothing more in the universe than a mere succession of finite dependent beings, then there is some degree of finiteness superior to all the rest; but this is impossible, since no cause can be assigned for this degree rather than any other: besides, this supreme finite being will want a cause of its existence, since it is finite; which yet it cannot have, since all the rest are inferior to it.

Or thus: If an infinite succession of finite beings be possible, let us suppose it in men: it will be necessary, however, to suppose one or more beings superior to man, on account of the exquisiteness of his frame of body and mind, which is far above his own power to execute, and capacity to comprehend: and if this being or beings be not infinite, we must have recourse to a second infinite succession of finite beings. But then it will be natural to suppose, that these beings, though able to comprehend man through their superior faculties, cannot comprehend themselves, and so on till we come to an infinite being, who alone can comprehend himself.

There are many other arguments and methods of reasoning, of the same kind with those here delivered, which lead to the same conclusion; and they all seem to turn upon this, that as all finite beings require a superior cause for their existence and faculties, so they point to an infinite one, as the only real cause, himself being uncaused. He is therefore properly denominated independent, self-existent, and necessarily existent; terms which import nothing more, when applied to the Deity, than the denial of a foreign cause of his existence and attributes; notwithstanding that these words, on account of their different derivations, and

relations to other words, may seem to have a different import, when applied to the Deity.

If it be objected, that a cause is required for an infinite being, as well as for a finite one; I answer, that though the want of a cause for finite beings, with other arguments for the same purpose, leads us necessarily to the consideration and admission of an infinite one; yet, when we are arrived there, we are utterly unable to think or speak properly of him: however, one would rather judge, that for the same reason that all finiteness requires a cause, infinity is incompatible with it.

If it be supposed possible for a man, through logical and metaphysical perplexities, or an unhappy turn of mind, not to see the force of these and such-like reasonings, he must, however, be at least *in equilibrio* between the two opposite suppositions of the proposition; *viz.* that of an infinite succession of finite dependent beings, and that of an infinite independent Being. In this case, the testimony of all ages and nations, from whatever cause it arises, and of the Scriptures, in favour of the last supposition, ought to have some weight, since some credibility must be due to these, in whatever light they be considered. If, therefore, they have no weight, this may serve to shew a man that he is not so perfectly *in equilibrio* as he may fancy.

This proposition will also be confirmed by the following. My chief design under it has been to produce the abstract metaphysical arguments for the existence of an infinite independent being. Some of these are more satisfactory to one person, some to another; but in all there is something of perplexity and doubt concerning the exact propriety of expressions, and method of reasoning, and perhaps ever will be; since the subject is infinite, and we finite. I have given what appears most satisfactory to myself; but without the least intention to censure the labours of others upon this important subject. If we understood one another perfectly, not only our conclusions, but our methods of arriving at them, would probably appear to coincide. In the mean time, mutual candour will be of great use for the preventing the ill effects of this branch of the confusion of tongues.

PROP. III.—*The Infinite Independent Being is endued with infinite Power and Knowledge.*

THIS proposition follows from the foregoing; it being evident, that most or all the ways there delivered, or referred to, for proving an infinite being, do, at the same time, prove the infinity of his power and knowledge. To suppose a being without any power, or any knowledge, is, in effect, to take away his existence, after it has been allowed. And to suppose an infinite being with only finite power, or finite knowledge, is so dissonant to the analogy of language, and of the received method of reasoning, that it must be rejected by the mind.

But the infinity of the divine power and knowledge may also be proved in many independent ways; and these proofs may be extended, in a contrary order, to infer the foregoing proposition.

Thus, first; When a man considers the several orders of sentient and intelligent beings below him, even in the most transient way, and asks himself whether or no mankind be the highest order which exists within the whole *compass of nature*, as we term it, he cannot but resolve this question in the negative; he cannot but be persuaded, that there are beings of a power and knowledge superior to his own, as well as inferior. The idea, the internal feeling, of the actual existence of such beings forces itself upon the mind, adheres inseparably to, and coalesces with, the reflection upon the inferior orders of beings, which he sees. Farther, as we can perceive no limits set to the descending scale, so it is natural, even at first view, to imagine, that neither has the ascending scale any limits; or, in other words, that there actually exists one or more beings endued with infinite power and knowledge.

Secondly, When we contemplate the innumerable instances and evidences of boundless power, and exquisite skill, which appear every where in the organs and faculties of animals, in the make and properties of the vegetable and mineral kingdoms, in the earth, water, and air of this globe, in the heavenly bodies, in light, gravity, electricity, magnetism, the attraction of cohesion, &c. &c. with the manifest adaptations and subserviencies of all these things to each other, in such manner as to shew both the most perfect knowledge of them, and of all their properties, and the most absolute command over them; when we consider also that vast extent of these effects of power and knowledge, which telescopes, microscopes, and the daily observations and experiments of mankind, open to our view; the real existence, first, of power and knowledge far beyond human conception, and then, of those that are actually infinite, forces itself upon the mind, by the close connexion and indissoluble union between the several ideas here mentioned.

For, thirdly, Though no finite being can comprehend more than the finite effects of power and knowledge; nay, though to suppose infinite effects, *i. e.* an infinite universe, is thought by some to involve a contradiction, to be the same thing as supposing an actually infinite number; yet it appears to me, that the other branch of the dilemma repels us with the greatest force. To suppose a finite universe, is to suppose a stop where the mind cannot rest; we shall always ask for a cause of this finiteness, and, not finding any, reject the supposition. Now, if the universe be supposed infinite, this proves at once the absolute infinity of the divine power and knowledge, provided we allow them to follow in a finite degree from the finite evidences of power and knowledge, in that part of the universe which is presented to our view.

As to the foregoing objection to the infinity of the universe, we may observe, that it arises merely from the finiteness of our comprehensions. We can have no conception of any thing infinite, nor of the possibility that any other being, conceived by us, can conceive this, &c. &c. But all this vanishes, when we come to consider, that there actually is, that there necessarily must be, an infinite being. This being may conceive his own infinite works, and he alone can do it. His own infinite nature, which we cannot but admit, is as much above conception as the infinity of his works. And all apparent contradictions, in these things, seem to flow merely from our using the words denoting infinity, of which we can neither have any idea, nor any definition, but by equivalent terms, like those words of which we have ideas or definitions. In the same manner as when the conditions of an algebraic problem are impossible, the unknown quantity comes out indeed by the resolution of the equation under an algebraic form, as in other cases; but then this form, when examined, is found to include an impossibility.

As the infinity of the divine power and knowledge may be deduced from that of the universe, so the last may be deduced from the first, supposed to be proved by other arguments. And it may be observed in general, upon all inquiries into this subject, that the mind cannot bear to suppose either God or his works finite, however unable we may be to think or speak of them properly, when they are supposed to be infinite.

Fourthly, As it appears from the train of reasoning used in this and the foregoing proposition, that an Infinite Being is absolutely necessary for the existence of the visible world, as its creator; so the consideration of this leads us to the infinity of his power and knowledge. The things created must be merely passive, and subject entirely to the will of Him who created them. In like manner, all the powers and properties of created things, with all the results of these in their mutual applications, through all eternity, must be known to him. And this follows in whatever manner we consider creation, of which we can certainly form no just idea. It is evident, as just now mentioned, that an author of this world is absolutely required; also, that this author must have been from all eternity. It is therefore most natural for us to conclude, that there have been infinite effects of his almighty power from all eternity. But then this does not exclude creations in time, I mean of things made from nothing. For it seems to me, that our narrow faculties cannot afford us the least foundation for supposing the creation of things from nothing impossible to God.

Lastly, There is a great accession of evidence for the infinity of the divine power and knowledge, and for the creation of all things by God, and their entire subjection to him, from the declarations of the Scriptures to this purpose. This accession of evidence can scarce be necessary in this age; but, in the infancy

of the world, revelation seems to have been the chief or only foundation of faith in any of the divine attributes. And even now, it cannot but be matter of the greatest comfort and satisfaction to all good men, to have an independent evidence for these important truths; and that more especially, if their minds have been at all perplexed with the metaphysical disputes and subtleties, which are often started on these subjects.

PROP. IV.—*God is infinitely Benevolent.*

As all the natural attributes of God may be comprehended under power and knowledge, so benevolence seems to comprehend all the moral ones. This proposition therefore, and the foregoing, contain the fundamentals of all that reason can discover to us concerning the divine nature and attributes.

Now, in inquiring into the evidences for the divine benevolence, I observe, first, That as we judge of the divine power and knowledge by their effects in the constitution of the visible world, so we must judge of the divine benevolence in the same way. Our arguments for it must be taken from the happiness, and tendencies thereto, that are observable in the sentient beings, which come under our notice.

Secondly, That the misery, to which we see sentient beings exposed, does not destroy the evidences for the divine benevolence, taken from happiness, unless we suppose the misery equal or superior to the happiness. A being who receives three degrees of happiness, and but one of misery, is indebted for two degrees of happiness to his Creator. Hence our inquiry into the divine benevolence is reduced to an inquiry into the balance of happiness or misery, conferred, or to be conferred, upon the whole system of sentient beings, and upon each individual of this great system. If there be reason to believe, that the happiness which each individual has received, or will receive, be greater than his misery, God will be benevolent to each being, and infinitely so to the whole infinite system of sentient beings; if the balance be infinitely in favour of each individual, God will be infinitely benevolent to each, and infinito-infinitely to the whole system.

It is no objection to this reasoning, that we desire pure happiness, and prefer it to an equal balance of happiness mixed with misery; or that the consideration of misery, amidst the works of an infinitely benevolent being, gives us perplexity. For this disappointment of our desires, and this perplexity, can amount to no more than finite evils, to be deducted from the sum total of happiness; and our obligations to the Author of our being must always be in proportion to this remaining sum. We may add, that as this disappointment and perplexity are sources of misery at present, they may, in their future consequences, be much ampler sources of happiness; and that this seems to be the

natural result of supposing that happiness prevails over misery.

Thirdly, Since the qualities of benevolence and malevolence are as opposite to one another, as happiness and misery, their effects, they cannot co-exist in the same simple unchangeable being. If therefore we can prove God to be benevolent, from the balance of happiness, malevolence must be entirely excluded; and we must suppose the evils, which we see and feel, to be owing to some other cause, however unable we may be to assign this cause, or form any conceptions of it.

Fourthly, Since God is infinite in power and knowledge, *i. e.* in his natural attributes, he must be infinite in the moral one also; *i. e.* he must be either infinitely benevolent, or infinitely malevolent. All arguments, therefore, which exclude infinite malevolence, prove the infinite benevolence of God.

Lastly, As there are some difficulties and perplexities which attend the proofs of the divine self-existence, power, and knowledge, so it is natural to expect, that others, equal, greater, or less, should attend the consideration of the divine benevolence. But here again revelation comes in aid of reason, and affords inexpressible satisfaction to all earnest and well-disposed persons, even in this age, after natural philosophy, and the knowledge of natural religion, have been so far advanced. In the early ages of the world, divine revelation must have been, almost, the only influencing evidence of the moral attributes of God.

Let us now come to the evidences for the divine benevolence, and its infinity.

First, then, It appears probable, that there is an over-balance of happiness to the sentient beings of this visible world, considered both generally and particularly. For though disorder, pain, and death, do very much abound every where in the world, yet beauty, order, pleasure, life, and happiness, seem to super-abound. This is indeed impossible to be ascertained by an exact computation. However, it is the general opinion of mankind, which is some kind of proof of the thing itself. For since we are inclined to think, that happiness or misery prevails, according as we ourselves are happy or miserable (which both experience, and the foregoing doctrine of association, shew), the general prevalence of the opinion of happiness is an argument of the general prevalence of the thing itself. Add to this, that the recollection of places, persons, &c. which we have formerly known, is in general pleasant to us. Now recollection is only the compound vestige of all the pleasures and pains, which have been associated with the object under consideration. It seems therefore, that the balance must have been in favour of pleasure. And yet it may be, that small or moderate actual pains are in recollection turned into pleasures. But then this will become an argument, in another way, for the prevalence of the pleasures, and particularly of those of recollection, *i. e.* mental ones. It appears also,

that the growth and health of the body infer the general prevalence of happiness, whilst they continue. Afterwards, the mental happiness may overbalance the bodily misery.

Secondly, If we should lay down, that there is just as much misery as happiness in the world, (more can scarce be supposed by any one,) it will follow, that if the laws of benevolence were to take place in a greater degree than they do at present, misery would perpetually decrease, and happiness increase, till, at last, by the unlimited growth of benevolence, the state of mankind, in this world, would approach to a paradisiacal one. Now, this shews that our miseries are, in a great measure, owing to our want of benevolence, *i. e.* to our moral imperfections, and to that which, according to our present language, we do and must call *ourselves*. It is probable therefore, that, upon a more accurate examination and knowledge of this subject, we should find, that our miseries arose not only in great measure, but entirely from this source, from the imperfection of our benevolence, whilst all that is good comes immediately from God, who must therefore be deemed perfectly benevolent. And since the course of the world, and the frame of our natures, are so ordered, and so adapted to each other, as to enforce benevolence upon us, this is a farther argument of the kind intentions of an overruling Providence. It follows hence, that malevolence, and consequently misery, must ever decrease.

Thirdly, All the faculties, corporeal and mental, of all animals, are, as far as we can judge, contrived and adapted both to the preservation and well-being of each individual, and to the propagation of the species. And there is an infinite coincidence of all the several subordinate ends with each other, so that no one is sacrificed to the rest, but they are all obtained in the utmost perfection by one and the same means. This is a strong argument for all the divine perfections, power, knowledge, and goodness. And it agrees with it, that final causes, *i. e.* natural good, are the best clew for guiding the invention in all attempts to explain the economy of animals.

Fourthly, As order and happiness prevail in general more than their contraries, so when any disorder, bodily or mental, does happen, one may observe, in general, that it produces some consequences, which in the end rectify the original disorder; and the instances where disorders propagate and increase themselves without visible limits, are comparatively rare. Nay, it may be, that all the apparent ones of this kind are really otherwise; and that they would appear otherwise, were our views sufficiently extensive.

Fifthly, The whole analogy of nature leads us from the consideration of the infinite power and knowledge of God, and of his being the Creator of all things, to regard him as our father, protector, governor, and judge. We cannot therefore but immediately hope and expect from him benevolence, justice, equity,

mercy, bounty, truth, and all possible moral perfections. Men of great speculation and refinement may desire to have this analogical reasoning supported, and shewn to be valid; and it is very useful to do this as far as we are able. But it carries great influence previously to such logical inquiries; and even after them, though they should not prove satisfactory, a person of a sober and well-disposed mind, would still find himself affected by it in no inconsiderable degree. Such a person would be compelled, as it were, to fly to the infinite Creator of the world in his distresses, with earnestness, and with some degree of faith, and would consider him as his father and protector.

Sixthly, Whenever we come to examine any particular law, fact, circumstance, &c. in the natural or moral world, where we have a competent information and knowledge, we find that every thing which has been, was right in respect to the sum total of happiness; and that when we suppose any change to have been made, which appears, at first sight, likely to produce more happiness; yet, after some reflection, the consideration of some other things, necessarily influenced by such a change, convinces us, that the present real constitution of things is best upon the whole. Books of natural history and natural philosophy, and indeed daily observation, furnish abundant instances of this; so as to shew, that, other things remaining the same, every single thing is the most conducive to general happiness, that it can be according to the best of our judgments. And though our judgments are so short and imperfect, that this cannot pass for an absolute conclusive evidence, yet it is very remarkable, that these imperfect judgments of ours should lie constantly on the same side. We have no reason to suppose, that a better acquaintance with things would give us cause to alter it, but far otherwise, as appears from the universal consent of all that are inquisitive and learned in these matters. And if there were a few objections in the other scale (which I believe philosophers will scarce allow), they can, at the utmost, have no more than the same imperfect judgment to rest upon.

Seventhly, Supposing that every single thing is, other things remaining the same, the most conducive to happiness that it can be, then the real deficiencies that are found in respect of happiness, and which, at first sight, appear to arise from a proportional deficiency in the divine benevolence, may be equally ascribed to a deficiency in the divine power or knowledge. For this wonderful, precise, minute adaptation of every thing to each other, is such an argument for benevolence in the most unbounded sense, that one would rather ascribe, whatever disorders there are in the universe, to some necessary imperfection in things themselves, surpassing, if possible, the divine power or knowledge to rectify; this appearing to be the weaker side of the dilemma.

By a single thing, in the two foregoing paragraphs, I mean one that is so comparatively; so that I call not only a single

part of an animal (which yet is a thing decomposed, perhaps without limits), but a whole system of animals, when compared with other systems, a single thing. Now, to ask whether happiness could not be promoted, if the whole universe was changed, is absurd; since it is probable, from what is already offered, that the happiness of the universe is always infinitely great; the infinity of the divine power and knowledge requiring infinite benevolence, *i. e.* the infinite happiness of the creation, if benevolence be at all supposed a divine attribute, as has been noted before.

Eighthly, Since the apparent defects that are in happiness may, according to the last paragraph but one, be equally referred to some supposed defect in one of the principal attributes of power, knowledge, or goodness; it does even from hence appear probable, that these defects are not owing to any defect in any of them, *i. e.* that there are no such defects in reality, but that all our difficulties and perplexities in these matters arise from some misapprehensions of our own, in things that infinitely surpass our capacities; this supposition, whatever reluctance we may have to it, being far the most easy and consistent of any.

Ninthly, I remarked above, that the exclusion of infinite malevolence from the divine nature does itself prove the infinite benevolence of God. Let us see what arguments there are for this exclusion. Now, malevolence always appears to us under the idea of imperfection and misery; and therefore infinite malevolence must appear to us to be infinitely inconsistent with the infinite power and knowledge proved, in the foregoing proposition, to belong to the divine nature. For the same reasons, infinite benevolence, which always appears to us under the idea of perfection and happiness, seems to be the immediate and necessary consequence of the natural attributes of infinite power and knowledge: since the wishing good to others, and the endeavouring to procure it for them, is, in us, generally attended with a pleasurable state of mind, we cannot but apply this observation to the divine nature, in the same manner that we do those made upon our own power and knowledge. And to deny us the liberty of doing this in the first case, would be to take it away in the last, and consequently to reduce us to the absurd and impossible supposition, that there is no power or knowledge in the universe superior to our own.

Tenthly, Malevolence may also be excluded in the following manner: if we suppose a system of beings to be placed in such a situation, as that they may occasion either much happiness, or much misery, to each other, it will follow, that the scale will turn more and more perpetually in favour of the production of happiness: for the happiness which *A* receives from *B*, will lead him by association to love *B*, and to wish and endeavour *B*'s happiness, in return: *B* will therefore have a motive, arising from his desire of his own happiness, to continue his good offices

to *A*: whereas the misery that *A* receives from *B*, will lead him to hate *B*, and to deter him from farther injuries. This must necessarily be the case, if we only admit, that every intelligent being is actuated by the view of private happiness, and that his memory and trains of ideas are of the same kind with ours. Now, the first supposition cannot be doubted; and to exclude the last, would be to forbid all reasoning upon other intelligent beings: not to mention, that these two suppositions cannot, perhaps, be separated, since the desire of happiness seems in us to be the mere result of association, as above explained; and association itself the general law, according to which the intellectual world is framed and conducted. Now this different tendency of benevolence and malevolence, *viz.* of the first to augment itself without limits, of the latter to destroy itself ultimately, appears to be a very strong argument for the infinite benevolence of God. For, according to this, benevolence must arise in all beings, other things being alike, in proportion to their experience of good and evil, and to their knowledge of causes and effects. One cannot doubt, therefore, but that infinite benevolence is inseparably connected with the supreme intelligence: all the higher orders of intellectual beings have, probably, higher degrees of it, in the general, and accidental differences, as we call them, being allowed for; and therefore the highest intelligence, the infinite mind, must have it in an infinite degree; and as every degree of benevolence becomes a proportional source of happiness to the benevolent; so the infinite benevolence of the Supreme Being is the same thing with his infinite perfection and happiness. In like manner, the contemplation of the infinite perfection and happiness of God is an inexhaustible treasure of happiness to all his benevolent and devout creatures; and he is infinitely benevolent to them, in giving them such faculties, as, by their natural workings, make them take pleasure in this contemplation of his infinite happiness.

Eleventhly, A reason may be given not only consistent with the infinite benevolence of God, but even arising from it, why some doubts and perplexities should always attend our inquiries into it, and arguments for it, provided only that we suppose our present frame to remain such as it is; for it appears from the frame of our natures, as I shall shew hereafter, and was hinted in the last paragraph, that our ultimate happiness must consist in the pure and perfect love of God; and yet, that, admitting the present frame of our natures, our love of God can never be made pure and perfect without a previous fear of him. In like manner, we do, and must, upon our entrance into this world, begin with the idolatry of external things, and, as we advance in it, proceed to the idolatry of ourselves; which yet are insuperable bars to a complete happiness in the love of God. Now, our doubts concerning the divine benevolence teach us to set a much

higher value upon it, when we have found it, or begin to hope that we have; our fears enhance our hopes, and nascent love; and all together mortify our love for the world, and our interested concern for ourselves, and particularly that part of it which seeks a complete demonstration of the divine benevolence, and its infinity, from a mere selfish motive; till at last we arrive at an entire annihilation of ourselves, and an absolute acquiescence and complacency in the will of God, which afford the only full answer to all our doubts, and the only radical cure for all our evils and perplexities.

Twelfthly, It is probable, that many good reasons might be given, why the frame of our natures should be as it is at present, all consistent with, or even flowing from, the benevolence of the divine nature; and yet still that some supposition must be made, in which the same difficulty would again recur, only in a less degree. However, if we suppose this to be the case, the difficulty of reconciling evil with the goodness of God might be diminished without limits, in the same manner as mathematical quantities are exhausted by the terms of an infinite series. It agrees with this, that as long as any evil remains, this difficulty, which is one species of evil, must remain in a proportional degree; for it would be inconsistent to suppose any one species to vanish before the rest. However, if God be infinitely benevolent, they must all decrease without limits, and consequently this difficulty, as just now remarked. In the mean time, we must not extend this supposition of evil, and of the difficulty of accounting for it, to the whole creation: we are no judges of such matters; and the Scriptures may, perhaps, be thought rather to intimate, that the mixture of good and evil is peculiar to us, than common to the universe, in the account which they give of the sin of our first parents, in eating of the tree of the knowledge of good and evil.

Thirteenthly, Some light may, perhaps, be cast upon this most difficult subject of the origin of evil, if we lay down the several notions of infinite goodness, which offer themselves to the mind, and compare them with one another, and with the appearances of things. Let us suppose then, that we may call that infinite benevolence, which makes either,

1. Each individual infinitely happy always. Or,
2. Each individual always finitely happy, without any mixture of misery, and infinitely so in its progress through infinite time. Or,
3. Each individual infinitely happy, upon the balance, in its progress through infinite time, but with a mixture of misery. Or,
4. Each individual finitely happy in the course of its existence, whatever that be, but with a mixture of misery as before; and the universe infinitely happy upon the balance. Or,
5. Some individuals happy and some miserable upon the

balance, finitely or infinitely, and yet so that there shall be an infinite overplus of happiness in the universe.

All possible notions of infinite benevolence may, I think, be reduced to some one of these five; and there are some persons who think, that the infinity of the divine benevolence may be vindicated upon the last and lowest of these suppositions. Let us consider each particularly.

The first, *viz.* That each individual should be always happy infinitely, is not only contrary to the fact at first view, but also seems impossible, as being inconsistent with the finite nature of the creatures. We reject it therefore as soon as proposed, and do not expect that the divine benevolence should be proved infinite in this sense. And yet were each individual always finitely happy according to the next supposition, we should always be inclined to ask why he had not a greater finite degree of happiness conferred upon him, notwithstanding the manifest absurdity of such a question, which must thus recur again and again for ever.

The second supposition is that which is most natural as a mere supposition. We think that pure benevolence can give nothing but pure happiness, and infinite benevolence must give infinite happiness. But it is evidently contrary to the fact, to what we see and feel, and therefore we are forced, though with great unwillingness, to give up this notion also. It may, however, be some comfort to us, that if we could keep this, the same temper of mind which makes us prefer it to the next, would suggest the question, *Why not more happiness?* again and again for ever, as just now remarked; so that we should not be satisfied with it, unless our tempers were also altered. This, indeed, would be the case, because, as I observed before, all the species of evil and imperfection must vanish together. But then this consideration, by shewing that the endless recurrency of the question above-mentioned, and the concomitant dissatisfaction, are imperfections in us, shews, at the same time, that they are no proper foundation for an objection to the divine benevolence.

The third supposition is possible in itself; but then it can neither be supported, nor contradicted, by the facts. If there appear an unlimited tendency towards the prevalence of happiness over misery, this may be some presumption for it. But all our judgments, and even conjectures, are confined within a short distance from the present moment. A divine revelation might give us an assurance of it. And it seems, that this supposition is, upon an impartial view, equally eligible and satisfactory with the foregoing. We estimate every quantity by the balance, by what remains after a subtraction of its opposite; and if this be an allowed authentic method, in the several kinds of happiness, why not in happiness considered in the abstract? But we must not conclude, that this is the genuine notion of the divine benevolence. There may perhaps be some presumptions for it; both

from reason and Scripture; but I think none, in the present infancy of knowledge, sufficient to ground an opinion upon. However, there seem to be no possible presumptions against it; and this may encourage us to search both the book of God's word, and that of his works, for matter of comfort to ourselves, and argument whereby to represent his moral character in the most amiable light.

The fourth supposition is one to which many thinking, serious, benevolent, and pious persons are now much inclined. All the arguments here used for the divine benevolence, and its infinity, seem to infer it, or, if they favour any of the other suppositions, to favour the third, which may be said to include this fourth. There are also many declarations in the Scriptures concerning the goodness, bounty, and mercy of God to all his creatures, which can scarce be interpreted in a lower sense.

As to the fifth supposition, therefore it follows, that it is opposed by the preceding arguments, *i. e.* by the marks and footsteps of God's goodness in the creation, and by the declarations of the Scriptures to the same purpose. However, there are a few passages of Scripture, from whence some very learned and devout men still continue to draw this fifth supposition; they do also endeavour to make this supposition consistent with the divine benevolence, by making a farther supposition, *viz.* that of philosophical liberty, as it is called in these observations, or the power of doing different things, the previous circumstances remaining the same. And it is highly incumbent upon us to be humble and diffident in the judgments which we make upon matters of such importance to us, and so much above our capacities. However, it does not appear to many other learned and devout persons either that the Scripture passages alluded to are a proper foundation for this opinion, or that of philosophical free-will, though allowed, can afford a sufficient vindication of the divine attributes.

These observations seem naturally to occur, upon considering these five suppositions, and comparing them with one another, and with the word and works of God. But there is also another way of considering the third supposition, which, as it is a presumption for it, though not an evidence, agreeably to what was intimated above, I shall here offer to the reader.

First then, Association has an evident tendency to convert a state of superior happiness, mixed with inferior misery, into one of pure happiness, into a paradisiacal one, as has been shewn in the first part of these observations, Prop. XIV. Cor. IX. Or, in other words, association tends to convert the state of the third supposition into that of the second.

Secondly, When any small pain is introductory to a great pleasure, it is very common for us, without any express reflection on the power of association, to consider this pain as coalescing with the subsequent pleasure, into a pure pleasure, equal to the

difference between them; and, in some cases, the small pain itself puts on the nature of a pleasure, of which we see many instances in the daily occurrences of life, where labour, wants, pains, become actually pleasant to us, by a lustre borrowed from the pleasures to be obtained by them. And this happens most particularly, when we recollect the events of our past lives, or view those of others. It is to be observed also, that this power of uniting different and opposite sensations into one increases as we advance in life, and in our intellectual capacities; and that, strictly speaking, no sensation can be a monad, inasmuch as the most simple are infinitely divisible in respect of time, and extent of impression. Those, therefore, which are esteemed the purest pleasures, may contain some parts which afford pain; and, conversely, were our capacities sufficiently enlarged, any sensations, connected to each other in the way of cause and effect, would be esteemed one sensation, and be denominated a pure pleasure, if pleasure prevailed upon the whole.

Thirdly, As the enlargement of our capacities enables us thus to take off the edge of our pains, by uniting them with the subsequent superior pleasures, so it confers upon us more and more the power of enjoying our future pleasures by anticipation, by extending the limits of the present time, *i. e.* of that time in which we have an interest. For the present time, in a metaphysical sense, is an indivisible moment; but the present time, in a practical sense, is a finite quantity of various magnitudes, according to our capacities, and, beginning from an indivisible moment in all, seems to grow on indefinitely in beings who are ever progressive in their passage through an eternal life.

Suppose now a being of great benevolence, and enlarged intellectual capacities, to look down upon mankind passing through a mixture of pleasures and pains, in which, however, there is a balance of pleasure, to a greater balance of pleasure perpetually, and, at last, to a state of pure and exalted pleasure, made so by association: it is evident that his benevolence to man will be the source of pure pleasure to him from his power of uniting the opposite sensations, and of great present pleasure from his power of anticipation. And the more we suppose the benevolence and capacities of this being enlarged, the greater and more pure will his sympathetic pleasure be, which arises from the contemplation of man. It follows, therefore, that, in the eye of an infinite mind, creatures conducted, as we think, according to the third of the foregoing suppositions, are conducted according to the second, and these according to the first; or, in other words, that the first, second, and third, of the foregoing suppositions, are all one and the same in the eye of God. For all time, whether past, present, or future, is present time in the eye of God, and all ideas coalesce into one to him; and this one is infinite happiness, without any mixture of misery, *viz.* by the infinite prepollence of happiness above misery, so as to annihilate it; and this merely by

considering time as it ought to be considered in strictness, *i. e.* as a relative thing, belonging to beings of finite capacities, and varying with them, but which is infinitely absorbed in the pure eternity of God. Now the appearance of things to the eye of an infinite being must be called their real appearance in all propriety. And though it be impossible for us to arrive at this true way of conceiving things perfectly, or directly, yet we shall approach nearer and nearer to it, as our intellectual capacities, benevolence, devotion, and the purity of our happiness, depending thereon, advance: and we seem able, at present, to express the real appearance, in the same way as mathematicians do ultimate ratios, to which quantities ever tend, and never arrive, and in a language which bears a sufficient analogy to other expressions that are admitted. So that now (if we allow the third supposition) we may, in some sort, venture to maintain that which at first sight seemed not only contrary to obvious experience, but even impossible, *viz.* that all individuals are actually and always infinitely happy. And thus all difficulties relating to the divine attributes will be taken away; God will be infinitely powerful, knowing, and good, in the most absolute sense, if we consider things as they appear to him. And surely, in all vindications of the divine attributes, this ought to be the light in which we are to consider things. We ought to suppose ourselves in the centre of the system, and to try, as far as we are able, to reduce all apparent retrogradations to real progressions. It is also the greatest satisfaction to the mind thus to approximate to its first conceptions concerning the divine goodness, and to answer that endless question, *Why not less misery, and more happiness?* in a language which is plainly analogous to all other authentic language, though it cannot yet be felt by us on account of our present imperfection, and of the mixture of our good with evil. Farther, it is remarkable, that neither the fourth nor fifth suppositions can pass into the third, and that the fifth will always have a mixture of misery in it, as long as the *principium individuationis* is kept up. And if this be taken away, the suppositions themselves are destroyed, and we entirely lost.

I have been the longer in considering the divine benevolence, on account of its importance both to our duty and happiness. There seems to be abundant foundation for faith, hope, resignation, gratitude, love. We cannot doubt but the Judge and Father of all the world will conduct himself according to justice, mercy, and goodness. However, I desire to repeat once more, that we do not seem to have sufficient evidence to determine absolutely for any of the three last suppositions. We cannot indeed but wish for the third, both from self-interest and benevolence; and its coincidence with the first and second, in the manner just now explained, appears to be some presumption in favour of it.

PROP. V.—*There is but one Being infinite in Power, Knowledge, and Goodness; i. e. but one God.*

FOR, if we suppose more than one, it is plain, since the attributes of infinite power, knowledge, and goodness include all possible perfection, that they must be entirely alike to each other, without the least possible variation. They will, therefore, entirely coalesce in our idea, *i. e.* be one to us. Since they fill all time and space, and are all independent, omnipotent, omniscient, and infinitely benevolent, their ideas cannot be separated, but will have a numerical, as well as a generical, identity. When we suppose other beings generically the same, and yet numerically different, we do, at the same time, suppose that they exist in different portions of time or space; which circumstances cannot have place in respect of the supposed plurality of infinite beings. We conclude, therefore, that there is but one infinite Being, or God.

The unity of the Godhead is also proved by revelation, considered as supported by evidences which have no dependence on natural religion. And as this proof of the unity is of great importance even now, so it was of far greater in ancient times, when the world was overrun with polytheism. And it is highly probable to me, that as the first notions of the divine power, knowledge, and goodness, which mankind had, were derived from revelation, so much more were their notions of the unity of the Godhead.

PROP. VI.—*God is a Spiritual or Immaterial Being.*

SINCE God is the cause of all things, as appears from the foregoing propositions, he must be the cause of all the motions in the material world. If, therefore, God be not an immaterial being, then matter may be the cause of all the motions in the material world. But matter is a mere passive thing, of whose very essence it is, to be endued with a *vis inertiae*; for this *vis inertiae* presents itself immediately in all our observations and experiments upon it, and is inseparable from it even in idea. When we consider any of the active powers of matter, as they are called, such as gravitation, magnetism, electricity, or the attractions and repulsions, which take place in the cohesions and separations of the small particles of natural bodies, and endeavour to resolve these into some higher and simpler principles, the *vis inertiae* is always the common basis upon which we endeavour to erect our solutions. For the active party, which is supposed to generate the gravitation, magnetism, &c. in the passive one, must have a motion, and a *vis inertiae*, whereby it endeavours to persist in that motion, else it could have no power; and, by parity of reason, the passive party must have a *vis inertiae* also, else it could neither make resistance to the active party, nor

impress motion on foreign bodies. Let us proceed, therefore, as far as we please, in a series of successive solutions, we shall always find a *vis inertiae* inherent in matter, and a motion derived to it from some foreign cause. If this cause be supposed matter always, we shall be carried on to an infinite series of solutions, in each of which the same precise difficulty will recur, without our at all approaching to the removal of it. Whence, according to the mathematical doctrine of ultimate ratios, not even an infinite series, were that possible in this case, could remove it. We must, therefore, stop somewhere, and suppose the requisite motion to be imparted to the subtle matter, by something, which is not matter; *i. e.* since God is the ultimate author of all motion, we must suppose him to be immaterial.

The same thing may be inferred thus: if there be nothing but matter in the world, then the motions and modifications of matter must be the cause of intelligence. But even finite intelligences, such as that of man, for instance, shew so much skill and design in their constitution, as also to shew, that their causes, *i. e.* the appropriated motions and modifications of matter, must be appointed and conducted by a prior and superior intelligence. The infinite intelligence of God therefore, proved in the third proposition, since it results from the motions and modifications of matter, requires another infinite intelligence to direct these motions, which is absurd. God is therefore proved to be immaterial from his infinite intelligence.

It is true, indeed, that our senses convey nothing to us but impressions from matter; and, therefore, that we can have no express original ideas of any things, besides material ones; whence we are led to conclude, that there is nothing but matter in the universe. However, this is evidently a prejudice drawn from our situation, and an argument taken merely from our ignorance, and the narrowness of our faculties. Since therefore, on the other hand, mere matter appears quite unable to account for the simplest and most ordinary phænomena, we must either suppose an immaterial substance, or else suppose that matter has some powers and properties different and superior to those which appear. But this last supposition is the same in effect as the first, though, on account of the imperfection of language, it seems to be different.

At the same time it ought to be observed, that if a person acknowledges the infinite power, knowledge, and goodness of God, the proofs of which are prior to, and quite independent on, that of his immateriality, this person acknowledges all that is of practical importance. But then, on the other hand, it is also to be observed, that the opinion of the materiality of the divine nature has a tendency to lessen our reverence for it, and, consequently, to invalidate the proofs of the divine power, knowledge, and goodness.

How far the Scriptures deliver the immateriality of God in a

strict philosophical sense, may perhaps be doubted, as their style is in general popular. However, there is a strong presumption, that they teach this doctrine, since the popular sense and natural interpretation of many sublime passages concerning the divine nature infer its immateriality. There is therefore some evidence for this attribute, to be taken from revelation, considered as standing upon its own distinct proofs.

COR. Since God is immaterial, matter must be one of the works of his infinite power. In the mean time, this does not seem to me to exclude the possibility of its having existed from all eternity. But then, neither have we, on the other hand, any reason to conclude, that the whole material system, or any part of it, could not have been created in time. It is, perhaps, most probable, *i. e.* suitable to the divine attributes, that infinite material worlds have existed from all eternity. But it becomes us, in all these things, to distrust our own reasonings and conjectures to the utmost.

PROP. VII.—*God is an Eternal and Omnipresent Being.*

GOD'S eternity, *à parte ante*, appears from the second proposition, in which his independency is proved; and the eternity, *à parte post*, is inseparably connected with that *à parte ante*. Both are also included in the idea of infinite power, or of infinite knowledge; and, indeed, when we say, that God is eternal *à parte ante*, and *à parte post*, we do, we can, mean no more, than to say, that his power and knowledge extend to all times. For we must not conceive or affirm, that he exists in succession, as finite beings do; through whose imaginations, or intellects, trains of ideas pass. All time, as was said before, is equally present to him, though in a manner of which we cannot form the least conception.

In like manner, by God's omnipresence, or ubiquity, we must be understood to mean, that his power and knowledge extend to all places. For as time, and its exponent, the succession of ideas, is a thing that relates merely to finite beings; so space and place relate, in their original sense, to material ones only; nor can we perceive any relation that they bear to immaterial ones, unless as far as we feign a resemblance between material and immaterial beings, which is surely an inconsistent fiction. We cannot, therefore, discover any relation which space or place bear to the divine existence. It is a sufficient acknowledgment both of God's eternity and omnipresence, that we believe his power and knowledge to extend to all times and places, though we be entirely at a loss how to conceive or express the manner of this infinite extent of these attributes. And there is a remarkable agreement between innumerable passages of the Scriptures, and this practical notion of God's eternity and omnipresence.

PROP. VIII.—*God is an Immutable Being.*

THIS follows from the infinity of the divine power, knowledge, and goodness, *i. e.* from his infinite perfection. For if the divine nature admitted of any variation, it would also admit of different kinds and degrees of perfection, and therefore could not always be infinitely perfect. This is the most abstracted and philosophical way of considering the divine immutability. In a popular and practical sense, it excludes all that which we call inconsistent, arbitrary, and capricious, in finite beings; and becomes a sure foundation for hope, trust, and resignation. We may consider ourselves as being at all times, and in all places, equally under the direction and protection of the same infinite power, knowledge, and goodness, which are so conspicuous in the frame of the visible world.

PROP. IX.—*God is a Free Being.*

THE authors who have treated upon the divine nature and attributes, usually ascribe liberty or freedom to God, and suppose it to be of a nature analogous to that free-will which they ascribe to man. But it appears to me, that neither the philosophical nor popular liberty, as they are defined below in the fourteenth and fifteenth propositions, can be at all applied to God. Thus, we can neither apply to God the power of doing different things, the previous circumstances remaining the same, nor a voluntary generated power of introducing ideas, or performing motions; nor any thing analogous to either of these powers, without the grossest anthropomorphism.

But liberty is also used in another sense, *viz.* as the negation of, and the freedom from, a superior, compelling force; and in this sense it may and must be applied to the Deity; his independency and infinity including it. And in this sense it is contrary to the notion of those heathens, who supposed even God himself subject to fate.

Upon the whole, if by liberty, freedom, or free-will, be meant any thing great or glorious, God certainly has it; if otherwise, certainly not. Thus, if it mean freedom from a superior compelling cause of any kind, as in the last paragraph, God certainly has it, he being the cause of causes, the universal, the one only cause. If it mean, that God could have made an universe less perfect than that which actually exists, he certainly has it not, because this would make God less perfect also. And here it seems to be a thing established amongst writers on this matter, to maintain, that God is subject to a moral necessity, and to the perfection of his own nature; which expressions, however, are to be considered as nothing more than particular ways of asserting the infinity of the divine power, knowledge, and goodness. If it be said, that God might have made a different universe,

equally perfect with that which now exists, and that his freedom consists in this, the answer seems to be, that we are entirely lost here, in the infinities of infinities, &c. *ad infinitum*, which always have existed, and always will exist, with respect to kind, degree, and every possible mode of existence. One cannot, in the least, presume either to deny or affirm this kind of freedom of God, since the absolute perfection of God seems to imply both entire uniformity, and infinite variety, in his works. We can here only submit, and refer all to God's infinite knowledge and perfection.

PROP. X.—*Holiness, Justice, Veracity, Mercy, and all other moral Perfections, ought to be ascribed to God in an infinite Degree.*

I HAVE in the last four propositions treated of such attributes of the divine nature, as have a more immediate connexion with the natural ones of independency, infinite power, and infinite knowledge. I come now to those that are deducible from, and explanatory of, the moral one, *viz.* of the divine benevolence.

The chief of these seem to be holiness, justice, veracity, and mercy. These are ascribed to all earthly superiors, to whom we pay respect and love, and therefore must belong, in the popular and practical sense, to Him, who is the highest object of reverence and affection. Let us see how each is to be defined, and what relation they bear to benevolence.

First, then, Holiness may be defined by moral purity and rectitude. And these, when applied to the Deity, can only denote the rectitude of his actions towards his creatures. If therefore he be benevolent to all his creatures, he cannot but have moral purity and rectitude.

The same thing may be considered thus: All moral turpitude in us proceeds from our selfish fears or desires, made more irregular and impetuous through our ignorance, and other natural imperfections. But none of these causes can take place with respect to the Deity; he must therefore be free from all moral turpitude.

Justice is that which gives to every one according to his deserts, at least as much as his good deserts require, and not more than is suitable to his evil ones. But this is evidently included in the divine benevolence, even according to the fifth of the suppositions, mentioned Prop. IV. by those who defend that supposition, and, according to the third and fourth, by the common consent of all, and the plain reason of the thing. No man can deserve more from his Creator than a balance of happiness proportional to his merit, which is the fourth supposition; and consequently the divine benevolence, according to the third supposition, in which the balance of happiness is infinite, includes strict justice, and infinitely more. And all this will hold equally, whether we

define desert in the popular, practical way, by the three meritorious principles of action, benevolence, piety, and the moral sense alone; or by these with the additional supposition of philosophical liberty, if we embrace either the third or fourth suppositions. Philosophical liberty is indeed necessary for the vindication of the divine benevolence and justice, according to the fifth supposition, in the opinion of most of those who hold this supposition. But then they esteem it to be also sufficient for this purpose, and consequently maintain the divine justice, into which we are now inquiring.

It may also be reckoned a part of justice not to let offenders go unpunished, or escape with too slight a degree of punishment; the order and happiness of the world, *i. e.* benevolence, requiring, that frail men should be deterred from vice by the dreadful examples of others, and mischievous persons disarmed. However, this does not at all hinder, but that the same persons, who are thus punished and disarmed, may afterwards receive a balance of happiness, finite or infinite. And thus punitive justice may be reconciled to bounty and benevolence, according to the third or fourth suppositions.

Veracity in men is, the observance of truth, and fidelity in all their declarations and promises to others; and the obligation to it arises from its great usefulness in all the intercourses of mankind with each other, and the extreme mischiefs which fiction and fraud occasion in the world. And it cannot be doubted, but that the divine benevolence, according to any of the suppositions above made, includes what is analogous to this moral quality in men.

In like manner, it cannot be doubted but that the divine benevolence includes mercy, or all that tenderness to offenders which the order and happiness of the world will permit. Or, if the fifth supposition made concerning the divine benevolence be found to exclude it, this will be a strong argument for rejecting that supposition.

I have here shewn in what manner we may vindicate these attributes of the divine nature, from the whole of things, *i. e.* the course of events, both as they now appear in the present state, and as we expect they will appear in a future one. But God has also given us sufficient general evidences of these his relative moral attributes, from the present state alone; at the same time that, if we extend our views no farther, some difficulties and perplexities will arise in respect of certain particulars. I will mention some both of the evidences and difficulties in regard to each of these four attributes of holiness, justice, veracity, and mercy.

It might be expected, that God, if he thought fit to institute a religion by revelation, should institute one in which holiness and moral purity should be eminently enjoined, and moral turpitude prohibited in the most awful manner. And it is a remark-

able coincidence of things, and evidence of the divine purity, that the Jewish and Christian religions should both have this internal proof, and the most cogent external ones in their favour. Whilst, on the contrary, the impure pagan religions had all the external marks of fiction and forgery.

The voice of conscience, or the moral sense, within a man, however implanted or generated, enjoining moral rectitude, and forbidding moral turpitude, and accordingly acquitting or condemning, rewarding or punishing, bears witness, in like manner, to the moral rectitude of that universal cause from whom it must proceed ultimately.

At the same time there are difficulties in revealed religion, and deviations in the moral sense, much contrary to what we seem to expect from our first notions of the divine rectitude.

Since God is just, we may expect that virtue will be the source of happiness, vice that of misery, even in this world. And so we find it in general; at the same time that there are many particular exceptions of both kinds.

The veracity of God seems to engage him to take care, that all those intimations which may be reckoned calls and cautions of nature, should give us right information; also, that all persons who have the apparent credentials of being sent from him, *i. e.* those of performing miracles, should be in truth so sent. And all things concur, in general, to verify both these positions. There are, however, several particular exceptions, as is well known.

Mercy requires, that such persons as repent and amend, should have opportunities of fresh trial, and of retrieving, afforded them. And this is remarkably so in the general. Most men are tried again and again before their healths, fortunes, credit, &c. become irrecoverable. And yet there are some instances of extraordinary severity upon the very first offence.

Now, it may be observed of all these instances, that the general tenor is sufficient to establish the attributes here asserted; it being reasonable to expect, from our ignorance of the present state, and much more from that of the future one, that great difficulties and exceptions must occur to us. And as these unsearchable judgments of God serve to humble us, and make us sensible of our ignorance, they even concur with the general tenor.

PROP. XI.—*God is to be considered by us, not only as our Creator, but also as our Governor, Judge, and Father.*

THAT God is our Creator, is evident from the three first propositions; in which his independency and infinite power are established, from the necessity which we finite and dependent beings have of an infinite and independent Creator: and this appellation belongs to him alone.

The three following appellations are first applied to earthly superiors; and therefore belong to God only in an analogical sense. It is, however, a sense of infinite importance to be acknowledged and regarded by us: let us, therefore, see in what manner analogies drawn from language, and from the phænomena of nature, lead us to call God our governor, judge, and father.

As God is our Creator, he has, according to the analogy of language, a right to dispose of us, to govern and judge us, and is also our father in a much higher sense than our natural parents, who are only occasional causes, as it were, of our existence. In like manner, his infinite power and knowledge entitle him to be our governor, and his infinite benevolence to be our father; the intimations also which he gives of his will, both in his word and works, and the rewards and punishments which he bestows in the way of natural consequences, as we term it, all shew, that he is our governor and judge. And as the moral attributes asserted in the last proposition may be deduced from these appellations of governor, judge, and father, established on independent principles, so they, when proved by their own peculiar evidences, infer these appellations; all which may be summed up in this general position, that the events of life, and the use of language, beget such trains of ideas and associations in us, as that we cannot but ascribe all morally good qualities, and all venerable and amiable appellations, to the Deity; at the same time that we perceive the meaning of our expressions not to be strictly the same, as when they are applied to men; but an analogical meaning, however a higher, more pure, and more perfect one. The justness of this application is farther confirmed by the common consent of all ages and nations, and by the whole tenor of the Scriptures.

If it be said, that since this method of speaking is not strictly literal and true, but merely popular and anthropomorphical, it ought to be rejected; I answer, that even the attributes of independency, omnipotence, omniscience, and infinite benevolence, though the most pure, exalted, and philosophical appellations, to which we can attain, fall infinitely short of the truth, of representing the Deity as he is, but are mere popular and anthropomorphical expressions. And the same might still be said for ever of higher and more pure expressions, could we arrive at them: they would ever be infinitely deficient, and unworthy of God. But then it appears from the preceding propositions, and other writings of a like nature, that, if we will consider the phænomena of the world, and argue from them sufficiently, we must needs see and acknowledge, that there is an Infinite Being, and that power, knowledge, and goodness, are his character. We cannot get rid of this internal feeling and conviction, but by refusing to consider the subject, and to pursue the train of reasoning, which our own faculties, or the preceding inquiries of others, will lead us to. God is not to be esteemed an unreal being, or destitute

of all character, because he is infinite and incomprehensible, or because we have not adequate phrases whereby to denote his existence and attributes. On the contrary, his infinite nature seems strongly to argue, that existence, power, knowledge, and goodness, do really and properly belong to him alone; and that what we call so here on earth, in our first and literal senses, are mere shadows and figures of the true realities. (And it would be in vain to bid us reject this language, since it must recur again and again from the frame of our natures, if we pursue the subject. In like manner, the relative moral attributes of holiness, justice, veracity, mercy, &c. and the relative moral appellations of governor, judge, and father, &c. are inseparably connected with the use of language, and the course and constitution of the visible world. We see that things have happened, and must believe, that they will hereafter happen, (*i. e.* in the general, and allowing for particular exceptions, as above remarked,) after such a manner as these attributes and appellations intimate to us: they are, consequently, a convenient and highly useful method of ranging and explaining past events, and predicting future ones, and therefore may be used for this purpose; nay, they must be so used, since the events of life thus ranged, explained, and predicted by them, do necessarily suggest them to us, and impress upon us this their use, admitting only the real existence of God, and his infinite power, knowledge, and goodness; which, as was just now shewn, cannot but be admitted, if men will think sufficiently on the subject. However, since the use of these relative moral attributes and appellations is popular, and attended with particular exceptions; whereas that of the attributes of infinite power, knowledge, and goodness, is more philosophical and extensive, it will be proper to bear this in mind; and where there appears to be any opposition between the popular and philosophical language, to interpret that in subordination to this.

COR. The doctrine of providence, general and particular, may be considered as a consequence from the foregoing attributes and appellations of the divine nature. By general providence, I mean the adjusting all events to the greatest good of the whole; by particular, the adjusting all to the greatest good of each individual; and, consequently, by both together, the adjusting the greatest good of the whole, and of each individual, to each other; so that both shall fall exactly upon the same point. However difficult this may seem, I take it to be the genuine consequence of the foregoing propositions. Infinite power, knowledge, and goodness, must make our most kind and merciful Father both able and willing to effect this: it does therefore actually take place, though we cannot see it. However, that there are many marks both of general and particular providence, as thus explained, is sufficiently evident, and acknowledged by all: both these appear also to be asserted in the Scriptures.

The following observation affords a strong evidence for a

particular providence. When a person surveys the events of his past life, he may find many, which have happened much contrary to natural expectations, and his then desires, which yet appear extremely beneficial and desirable at the now present time, as also to have proceeded from natural causes then unknown to him. Now, we may conclude from hence, that God conceals the tendencies and results of the course of nature at the then present time, lest we should trust in that, and forsake him; but discovers them afterwards with their harmonies and uses, that we may see his goodness, knowledge, and power, in them, and so trust *him* in future perplexities. It is analogous to this, that the Scripture prophecies are inexplicable before the event, and often sufficiently clear afterwards.

PROP. XII.—*The Manner of Reasoning here used, in respect of the Course and Constitution of Nature, has a tendency to beget in us Love and Reverence towards God, and obedience to his Will: or, in other Words, there is a Religion of Nature properly so called.*

NATURAL Religion appears to be used in different senses by different writers: however, they are all, I think, reducible to the three that follow, and will all be found to coincide ultimately, though they may appear different at first view.

The first sense in which natural religion may be used, is that of this proposition; in which it is put for that love and reverence towards God, and obedience to his will, which the light of nature, or the consideration of the works of God, enjoins. In this sense it is most properly opposed to, and contradistinguished from, revealed religion, or those affections and actions towards God, which the Scripture, or the word of God, enjoins.

Secondly, Natural religion may be defined such a regulation of the affections and actions as the moral sense requires: for the moral sense is a part of the light of nature, and of our natural faculties, whether it be considered as an instinct, or as the generated result of external impressions and our natural frame taken together, according to what is delivered in the first part of these observations; and this moral sense approves and commands, or disapproves and forbids, certain dispositions of mind, and bodily actions flowing therefrom. It is also called the law of first inscription by many persons, and under that term distinguished from the law of revelation, which is supposed posterior to it in order of time. Hence the same persons consider the moral sense, or law of first inscription, as the foundation of natural religion: and, indeed, most persons either expressly adopt, or implicitly refer to, this definition of natural religion in their writings and discourses. The heathen world, not having the immediate light of revelation, are supposed to have had nothing more than the mere light of nature, and mere natural religion; and they seem

to have been chiefly directed by the sense of what was fit, right, and proper, upon the occasion, *i. e.* by the moral sense. Natural religion may therefore, according to this way of considering it, be properly defined by the moral sense.

Thirdly, Natural religion may be defined by rational self-interest; *i. e.* it may be called such a regulation of our affections and actions, as will procure for us our *summum bonum*, or greatest possible happiness. If we suppose the inquiries of the ancients concerning the *summum bonum* to have been of a religious and moral nature, then will this definition be suitable to their notions. However, it has a very important use, *viz.* that of compelling us to be attentive, impartial, and earnest in the inquiry.

I will now proceed, first, to prove the proposition, or to deduce love and reverence to God, and obedience to his will, from the preceding method of reasoning concerning the course and constitution of nature; and, secondly, to shew the perfect agreement of all these three definitions of natural religion with each other.

Now it is at once evident, that the consideration of the infinite power, knowledge, and goodness of God, of his holiness, justice, veracity, and mercy, and of his being our Creator, Governor, Judge, and Father, must inspire us with the highest love and reverence for him, and beget in us that tendency to comply with his will, which, according to the proper use of language, is called a sense of *duty, obligation*, of what we *ought* to do. It is evident also, that the will of God must be determined by his attributes and appellations. He must therefore will, that we should apply to him, as we do to earthly superiors of the same character, purifying, however, and exalting our affections to the utmost; that we should be merciful, holy, just, &c. in imitation of him, and because this is to concur with him in his great design of making all his creatures happy; and lastly, that we should so use the pleasures of sense, and the enjoyments of this world, as not to hurt ourselves or others. There is therefore a course of action regarding God, our neighbour, and ourselves, plainly enjoined by the light of nature; or, in the words of the proposition, there is a religion of nature properly so called.

I come, in the next place, to shew the agreement of the second and third definitions of natural religion with the first, or with that of the proposition.

Now, that compliance with the moral sense coincides with obedience to the will of God, needs no proof, it being the first and immediate dictate of the moral sense, that it is fit, right, and our necessary duty, to obey God, as soon as he is discovered, with the amiable and awful attributes and appellations above ascribed to him. There is, therefore, an entire agreement between the first and second definitions. It may appear also, that the first rule of duty is necessary to perfect the second. For the moral sense, as will appear from the preceding history of its rise and growth, must be vague and uncertain, and vary according to the

various circumstances of life. But the moral character of God, as delivered in the foregoing propositions, affords a plain rule of life, applicable and precise in the various circumstances of it. When, therefore, obedience to the will of God is established by the moral sense, it does, in return, become a regulator to this, determine its uncertainties, and reconcile its inconsistencies. And, agreeably to this, we may observe, that the perfection of the moral sense is in general proportional to the perfection of our notions of the divine nature; and that the idolatry of the heathens, and their ignorance of the true God, must have produced an utter perversion and corruption of their moral sense, agreeably to the declarations of the Scriptures; which is a remarkable coincidence of reason with revelation.

In like manner, it needs no proof, that rational self-interest, and obedience to the will of God, are the same thing. Our only hope and security, here and hereafter, must be in our obedience to him, who has all power and all knowledge. And thus the first and third definitions are found to be perfectly coincident. The second and third, therefore, *i. e.* the whole three, are coincident also.

This coincidence might be confirmed by numberless instances, were we to consider and compare together the dictates of the moral character of God, of our own moral sense properly directed, and of rational self-interest in the several particular circumstances of life. But this would be to anticipate what I have to say in the third chapter of this second part concerning the rule of life.

PROP. XIII.—*Natural Religion receives great Light and Confirmation from Revealed.*

IT seems to be the opinion of some persons, that revealed religion is entirely founded upon natural; so that unless natural religion be first established upon its own proper evidences, we cannot proceed at all to the proof of revealed. If this were so, revealed religion could not cast any light or evidence upon natural, but what it had before received from it; and consequently, this proposition would be built upon that false way of reasoning which is called arguing in a circle. But there are certainly independent evidences for revealed religion, as well as for natural; they both receive light and confirmation from each other; and this mutual confirmation is a still farther evidence for both. I will give a short account of all these particulars, that the proposition may the more fully appear.

First, Natural religion has independent evidences. This has been the business of the foregoing propositions, and particularly of the last, to shew. And indeed, it is acknowledged by all, unless they be atheists or sceptics. We are certainly able to infer the existence and attributes of God, with our relation and

duty to him, from the mere consideration of natural phænomena, in the same manner as we do any conclusions in natural philosophy. And though our evidence here may not perhaps be demonstrative, it is certainly probable in the highest degree.

Secondly, Revealed religion has also independent evidences. For, if we allow the miracles mentioned in the Old and New Testaments, the genuineness and accomplishment of the prophecies contained therein, and the moral characters of Christ, the Prophets, and Apostles, it will be impossible not to pay the greatest regard to the doctrines and precepts which they deliver, *i. e.* to revealed religion. We do, and we must always, give credit to persons much superior to ourselves in natural and moral endowments. These endowments strike us with awe and reverence, engage our attention, humble us, and put us into a teachable, flexible disposition. And I appeal to all those, who do really believe the miracles and moral characters of Christ, the Prophets, and Apostles, and the accomplishment of the prophecies delivered by them, whether they do not immediately find themselves in this humble, teachable disposition of mind, upon considering these credentials of a divine mission, and that exclusively of all other considerations. As to those who do not suppose Christ, the Prophets, and Apostles, to have had these credentials, they can scarce be proper judges, what would be the genuine consequence of a state of mind, of a belief, which they have not. However, one may appeal even to them, provided they will only suppose these credentials true for a moment, in order to see what would then follow. And it is a strong argument of the justness of this reasoning, that all those who reject revealed religion, do also reject the credentials, *i. e.* the truth of the Scripture history. Revealed religion is therefore built upon the truth of the Scripture history, *i. e.* upon the external evidences commonly called historical and prophetical. But these evidences are to be tried in the same manner as the evidences for any other history, and have no more connexion with natural religion, and its evidences, such, for instance, as those delivered in this chapter, than the evidences for the Greek or Roman history. So that revealed religion has evidences, and those of the strongest kind, entirely independent on natural religion.

Thirdly, Natural religion receives much light and confirmation from revealed, agreeably to the proposition here to be proved. This follows both because revealed religion, now shewn to have its independent evidences, teaches the same doctrines concerning God as I have remarked already in several places, and delivers the same precepts to man, in the general, as natural; and because these very independent evidences, *viz.* the miracles and moral characters of Christ, the Prophets, and Apostles, and the accomplishment of their prophecies, have a direct and immediate tendency to beget in us a deep sense and conviction of a Superior Power, and of his providence and moral government over the

world. So that if a man should either be ignorant of the chain of reasoning by which the existence and attributes of God, and natural religion, are proved from the phænomena of the world; or should, from some depravation of mind, intellectual or moral, be disposed to call in question this chain of reasoning, in whole or in part; he must however come to the same conclusions, from the mere force of the historical and prophetic evidences in favour of the Scriptures. And this is a thing of the utmost importance to mankind, there being many who are incapable of pursuing this chain of reasoning, many who, though capable, are disinclined to it, many who, from their vices, have a contrary inclination, and some who, seeing the perplexity and obscurity that attend some subordinate parts of this reasoning, are disposed to doubt about the whole. For though something of the same kind holds in respect of the historical and prophetic evidences for the truth of the Scriptures, especially of the last, yet, in general, these are more level to the capacities of the inferior ranks amongst mankind, and more simple and striking than the independent evidences for natural religion; and if they were but equally convincing, they would, however, make the evidence double upon the whole. Not to mention, that it is an inexpressible satisfaction to the best men, and the ablest philosophers, those who have the most entire conviction from natural reason, to have this new and distinct support for such important truths. It may be added as an argument in favour of the reasoning of this paragraph, *i. e.* of the proposition here to be proved, to those who believe revealed religion, that God has thought fit to teach mankind natural religion chiefly by means of revealed.

Fourthly, Revealed religion receives great light and confirmation from natural. For if we suppose a person to be first instructed in the doctrines and precepts of natural religion, and to be entirely convinced of their truth and fitness from the mere light of reason, and then to have the Scriptures communicated to him, the conformity of these with his previous notions would be a strong evidence in their favour, *i. e.* in favour of the miracles, prophecies, and those doctrines which are peculiar to revealed religion. When, farther, he came to perceive, that many of the writers of the sacred books lived when the truths of natural religion were unknown to the rest of the world, and that many also were of so low a rank in life, that they cannot be supposed to have known even so much as the rest of the world did by natural means, he will be strongly inclined to allow them that supernatural light which they claim, *i. e.* to allow their divine authority.

Lastly, The mutual light and confirmation which natural and revealed religion cast upon each other, and the analogy which there is between their proper evidences, and even that between the several obscurities and perplexities that attend each, are a new argument in favour of both, considered as united together,

and making one rule of life, and the charter of a happy immortality. For resemblance, agreement, and harmony of the parts, are the peculiar characteristics of truth, as inconsistency and self-contradiction are of fiction and falsehood.

PROP. XIV.—*Religion presupposes Free-will in the popular and practical Sense; i. e. it presupposes a voluntary Power over our Affections and Actions.*

FOR religion being the regulation of our affections and actions according to the will of God, it presupposes, that after this will is made known to us, and we, in consequence thereof, become desirous of complying with it, a sufficient power of complying with it should be put into our hands. Thus, for instance, since religion commands us to love God and our neighbour, it presupposes that we have the power of generating these affections in ourselves, by introducing the proper generating causes, and making the proper associations, *i. e.* by meditation, religious conversation, and reading practical books of religion and prayer. Since religion requires of us to perform beneficent actions, and to abstain from injurious ones, also to abstain from all those self-indulgences which would be hurtful to ourselves, it presupposes either that we have a power of so doing, or at least a power of generating such dispositions of mind as will enable us so to do. Farther, it presupposes that we have a power of making perpetual improvement in virtuous affections and actions, since this also is required of us by it. Still farther, since religion requires of a man this regulation of his affections and actions, and since the powers hitherto mentioned are all grounded upon a sufficient desire thus to regulate himself, it must presuppose a power of generating this sufficient desire, and so on till we come to something which the man is already possessed of, as part of his mental frame, either conferred in a supernatural way, or acquired in the usual course of nature. For religion, in requiring the powers above-mentioned, requires also whatever previous powers are necessary to the actual exertion of these powers. But all these powers, of whatever order they are, the last excepted, are those powers over our affections and actions, which I have, in the foregoing part of this work, endeavoured to derive from association, and shewn to be the same with those which are commonly called voluntary powers. It follows therefore, that religion requires voluntary powers over our affections and actions, or free-will in the popular and practical sense.

This may be illustrated by the consideration of the state of madmen, idiots, children, and brutes, in respect of religion. For as they are all esteemed to be incapable of religion, and exempted from the obligation thereof, so the reason of this in all is evidently, that they are destitute of the proper voluntary powers

over their affections and actions; the association requisite thereto having never been formed in idiots, children, and brutes, and being confounded and destroyed in madmen. For suppose the child to be grown up, and the madman to recover his senses, *i. e.* suppose the associations requisite for the voluntary powers to be generated or restored, and religion will claim them as its proper subjects.

In like manner it may be observed, that when any action is commended or blamed; this is always done upon supposition, that the action under consideration was the effect of voluntary powers. Thus, when a man commits an action otherwise blameable, through inattention, ignorance, or disease, he is excused on account of its being involuntary; unless the inattention, ignorance, or disease, were themselves voluntary, and then the blame remains. But commendation and blame are ideas that belong to religion: it appears therefore, that voluntary powers must belong to it also.

I asserted above, that religion not only requires and presupposes the common voluntary powers, by which we perform and forbear actions, and new-model our affections, but also whatever else, voluntary or involuntary, is necessary for the actual exertion of these powers. And the connexion between these points seems to be immediate and undeniable; to require any thing, must be to require all that is necessary for that thing. And yet, since all men do not act up to the precepts of religion, it seems undeniable, on the other hand, that some want something that is necessary, immediately or mediately, for the actual exertion of the proper voluntary powers over their affections and actions. Now, I see no way of extricating ourselves from this difficulty, but by supposing that those who want this one necessary thing at present, will, however, obtain it hereafter, and that they who shall obtain it at any distant future time, may be said to have obtained it already, in the eye of Him to whom past, present, and future, are all present, *who quickeneth the dead, and calleth the things that be not as though they were.* For that the supposition of free-will, in the philosophical sense, cannot solve this difficulty, will appear, I think, in the next proposition.

COR. It may be reckoned some confirmation of religion, that the voluntary powers which it requires, according to this proposition, are an evident fact, and also that they are deducible from the frame of our natures, *i. e.* from our original faculties, and the law of association, taken together. For thus religion may be said to harmonize with observation, and with the nature of man, its subject.

PROP. XV.—*Religion does not presuppose Free-will in the philosophical Sense; i. e. it does not presuppose a Power of doing different Things, the previous Circumstances remaining the same.*

FOR, first, It has been shewn, in the foregoing part of this work, that we do not, in fact, ever exert any such power in the important actions of our lives, or the strong workings of our affections, all these being evidently determinable by the previous circumstances. There are therefore no actions or affections left, except trifling and evanescent ones, in which religion can presuppose philosophical free-will, or liberty; and even here the evidence for it is merely an *argumentum ab ignorantia*. But if religion requires philosophical liberty at all, it must require it chiefly in the most important actions and affections. It does not therefore require it at all. We cannot suppose religion to be at variance with common observation, and the frame of our natures.

Secondly, Some reasons have been given already, in the first part of this work, and more will be added in the next proposition, to shew that philosophical liberty cannot take place in man, but is an impossibility. It is therefore impossible that religion should require it.

Thirdly, It appears from the course of reasoning used under the foregoing proposition, that all which religion does require and presuppose, is, first, a sufficient desire, hope, fear, self-interest, or other such like motive, and then sufficient voluntary powers, whereby to regulate our affections and actions agreeably to the will of God. But philosophical liberty, or the power of doing different things, the previous circumstances remaining the same, is so far from being required, in order to our obtaining any of these requisites, that it is inconsistent with them. For the sufficient desire, &c. unless it be given by God in a supernatural way, is of a factitious nature, and follows the previous circumstances with a rigorous exactness; in like manner the voluntary powers are all generated according to the law of association, which law operates in a mechanical, necessary way, and admits of no variations, while the circumstances remain the same; all which is, I presume, sufficiently evident to those who have well considered the foregoing part of this work. These requisites are therefore inconsistent with philosophical liberty, inasmuch as this implies, that though there be a desire sufficient to cause the exertion of the will, this exertion may or may not follow; also, that though the voluntary powers depending on this exertion be completely generated by association, they may or may not follow it in fact. This supposition is indeed absurd at first sight; however, if it be admitted for a moment, in order to see what would follow, it is manifest, that the man will be rendered less able to comply with the will of God thereby, and that it will not

add to, but take away from, the requisites proposed by religion. Philosophical liberty does not therefore help us to solve the difficulty mentioned under the last proposition, but, on the contrary, increases it.

If it should be said, that we are not to suppose the desire sufficient, and the voluntary powers complete, and then farther to suppose that these may or may not take effect, but only to suppose desire in general, sufficient or insufficient, and voluntary powers in general, complete or incomplete, and that thus it will not be unreasonable to suppose that they may or may not take effect; whence the manifest absurdity mentioned in the last paragraph will be removed; I answer, that this is to desert the hypothesis of philosophical liberty, the previous circumstances being supposed different, that so their consequences may be different also. If any particular degree of desire or voluntary power be fixed upon, and all the other concurring circumstances of body and mind fixed likewise, *i. e.* if the previous circumstances be rigorously determinate, which is the supposition of philosophical liberty, this one fixed, determinate degree of desire, or voluntary power, cannot have the two opposite epithets of sufficient and insufficient, or of complete or incomplete, both predicated of it with truth, define sufficiency or completeness as you please. Philosophical liberty does not therefore allow us to suppose desire or voluntary power in general, in order that they either may or may not take effect.

Fourthly, It will appear, that religion does not presuppose philosophical liberty, if we enter upon the examination of those arguments which are commonly brought to shew that it does. These are, that unless philosophical liberty be admitted, there will be no foundation for commendation or blame, and consequently no difference between virtue and vice; that all punishment for actions, usually called vicious, will be unjust; and that God will be the author of such actions, which it is impious to suppose; inasmuch as the notion of popular liberty is not sufficient to obviate these difficulties. Now, to this I answer, that there are two different methods of speaking, and, as it were, two different languages, used upon these subjects; the one popular, and, when applied to God, anthropomorphitical; the other philosophical; and that the notion of popular liberty is sufficient to obviate these difficulties, while we keep to the popular language alone; also, that the philosophical language does of itself obviate these difficulties, while we keep to it alone; but that, if we mix these languages, then, and not till then, insuperable difficulties will arise, as might well be expected. Let us consider each of these positions particularly.

First then, I say that the supposition of popular liberty is sufficient to obviate the fore-mentioned difficulties, whilst we keep to the popular language alone. For, in the popular language, a man is commended and blamed merely for the right or

wrong use of his voluntary powers; the first is called virtue, the last vice; and rewards and punishments are said to be respectively due to them. Thus, when a man, having an opportunity to do a beneficent action, exerts an act of will, and in consequence thereof does it, he is commended for it; it is called a virtue, or a right use of his voluntary powers, and is said to deserve a reward; whereas, had he, in like circumstances, done a malevolent action, he would have been blamed for it; it would have been called a wrong use of his voluntary powers, or a vice; and a punishment inflicted upon him, in consequence hereof, would have been said to be just. This is a mere history of the fact, and a narration of the method in which the words here considered acquire their proper senses; and I appeal to the general tenor of writings and discourses for the support of what is here asserted. If no voluntary action be exerted, the words commendation, right use, virtue, reward, on one hand, also the words blame, wrong use, vice, punishment, on the other, become entirely unapplicable. If there be, and the motive be good, suppose piety or benevolence, the first set of words take place; if the motive be bad, the last. Men, in the common use of language, never consider whether the agent had it in his power to have done otherwise, the previous circumstances remaining the same; they only require that he should have done a beneficent action, from a benevolent intention. If they find this, they will apply the words commendation, right use, &c. And the same holds in respect of injurious actions, and malevolent intentions. The agent will, in this case, be blamed, and said to be justly punished, without any farther inquiry. Sometimes, indeed, they do inquire farther, *viz.* into the original of these intentions. But then this comes to the same thing at last; for if these intentions were generated voluntarily, it enhances the commendation of blame due to them; if, in great measure, involuntarily, abates it. Popular liberty, or voluntary powers, do therefore afford sufficient foundation for commendation and blame, for the difference between virtue and vice, and for the justice of punishing vice according to the popular language. Where it is to be remarked, that whatever will justify punishments inflicted by men, will justify those inflicted by God in like circumstances, since justice is ascribed to God only in a popular and anthropomorphitcal sense.

And as popular liberty suffices for the fore-mentioned purposes, whilst we use the popular language, so it vindicates God from the charge of being the author of sin, according to the same language. For, according to this, all voluntary actions are ascribed to men, not to God; but sin, or vice, always presupposes an exertion of a voluntary power, according to the popular language; therefore sin must be ascribed to man, and not to God, as long as we continue to speak the popular language.

Secondly, I say, that if we keep to the philosophical language alone, it will obviate all difficulties, and enable us to talk con-

sistently and clearly upon these subjects. For, according to this, virtue and vice are to actions, what secondary qualities are to natural bodies; *i. e.* only ways of expressing the relation which they bear to happiness and misery, just as the secondary qualities of bodies are only modifications of the primary ones. And the same may be said of all the other words belonging to the moral sense. Hence it follows, that, according to the philosophical language, we are to consider all the moral appellations of actions as only denoting their relation to natural good and evil, and that moral good and evil are only compositions and decompositions of natural. There is, however, a difference between moral good and evil, because they are different and opposite compositions: they may also be attended with different and opposite compositions; from the frame of our natures, and circumstances of our lives, such as commendation and blame.

And as justice in God is, by the same language, exalted into benevolence, he may inflict punishment, *i. e.* another species of natural evil, justly, provided it be consistent with benevolence, *i. e.* with a balance of happiness. Man may also inflict punishments justly, provided he does it according to some definition of justice amongst men, previously settled and allowed, suppose compliance with the will of God, the laws of society, the greater good of the whole, &c.

Farther, Since all the actions of man proceed ultimately from God, the one universal cause, we must, according to this language, annihilate self, and ascribe all to God. But then, since vice, sin, &c. are only modifications and compositions of natural evil, according to the same language, this will only be to ascribe natural evil to him: and, if the balance of natural good be infinite, then even this natural evil will be absolved and annihilated by it.

It may a little illustrate what is here delivered, to remark, that as we should not say of a Superior Being, whose sight could penetrate to the ultimate constitution of bodies, that he distinguished colours, but rather, that he distinguished those modifications of matter which produce the appearances of colours in us, so we ought not to ascribe our secondary ideas of virtue and vice to superior intelligences, and much less to the supreme.

Thirdly, I say, that if we mix these two languages, many difficulties and absurdities must ensue from this previous absurdity. Thus, if, retaining the popular notions of moral good and evil, we suppose God, according to the philosophical language, to be benevolent only, *i. e.* to regard only natural good and evil, or to be the author of all actions, the consequence will be impious. If we adhere to the philosophical notions of virtue and vice, we must not retain the popular notion of God's justice, inasmuch as punishment will then be unjust; as it will also be, if we join the popular notion of God's justice with the philosophical one, of his being the author of all actions. Lastly, If we allow man to

consider himself as the author of his own actions, he must also consider virtue and vice according to the popular notions, and conceive of God as endued with the popular attribute of justice, in order to be incited to virtue, and deterred from vice; whereas, could man really annihilate himself, and refer all to God, perfect love would cast out fear, he would immediately become partaker of the divine nature, and, being one with God, would see him to be pure benevolence and love, and all that he has made to be good.

The following remark may perhaps contribute to illustrate this matter. Virtue and vice, merit and demerit, reward and punishment, are applied to voluntary actions only, as before mentioned. Hence they are esteemed unapplicable to involuntary ones. But involuntary actions are necessary by a necessity *ab extra*, which is generally seen; and because the necessity *ab intra*, which causes voluntary actions, is seldom seen, these are supposed not to be necessary. Hence not necessary and necessary, are put for voluntary and involuntary, respectively; and moral appellations supposed peculiar to the first, *i. e.* not necessary; inconsistent with the last, *i. e.* necessary. Hence, when we come to discover our mistake, and to find that voluntary actions are necessary, an inconsistency arises; we apply moral appellations to them as voluntary from a primary association, deny these appellations of them on account of their new denomination of necessary, and a secondary and tralatitious association. Here then, if we can either persist in our mistake, and still suppose voluntary actions not to be necessary; or, finding this mistake, can however persist to apply moral appellations to such necessary actions as are voluntary, from the primary association; or, lastly, not being able to withstand the force of the secondary association, whereby moral appellations are denied of necessary actions, voluntary as well as involuntary, can perceive that moral good and evil are only compositions of natural, *i. e.* if we can either see the whole truth, or shut our eyes against that part that offends us; no difficulty will arise.

Philosophical liberty is also supposed by some necessary, in order to solve the origin of evil, and to justify the eternity of punishment; and the obviating of these difficulties is brought as an argument in support of it. Now here I observe,

First, That the origin of evil may be made consistent with the benevolence of God, by supposing that every creature has a balance of happiness; and, consequently, since this is a supposition highly probable, there seems to be little need of philosophical liberty for this purpose.

Secondly, That since this supposition is highly probable, the eternity of punishment is highly improbable; and, consequently, that philosophical liberty may be needless here also.

Thirdly, That philosophical liberty will not solve the origin of evil. The method of reasoning used here is some such as this.

If man have not philosophical liberty, but always does the same thing, where the previous circumstances are the same, then all his actions are to be referred to God; consequently, if he have philosophical liberty, all his actions need not be referred to God; he is an independent creature in some things, and is himself alone chargeable with some of his actions. Let man act wrong in these independent cases, and the evil which follows will be chargeable upon man, and not God; *i. e.* the origin of evil will be accounted for. But here it is to be observed, that there are some evils, or sufferings, which cannot be supposed to arise from the abuse of free-will in the creature that suffers, as in the pains which happen to children just born, and to brutes. These evils are not, therefore, chargeable upon *them*. If, therefore, they be chargeable upon free-will, it must be the free-will of some other creature. But this is as great a difficulty as that which it is brought to solve; and cannot be solved but by supposing that God gives a balance of happiness to *A*, for what he suffers from *B*. Now this supposition, in its full extent, will solve the first difficulty, and make the hypothesis of free-will entirely unnecessary, as observed above. But, besides this, it is to be considered, that since free-will is thus the occasion of introducing evil into the world, the restless, selfish, objecting creature will ask why he has free-will, since it is not this, but happiness, which *he* desires, and hoped from the divine benevolence, the attribute now to be vindicated. He that produces any cause, does, in effect, produce the thing caused. To give a being a power of making itself miserable, if this being use that power, is just the same thing, in him who has infinite power and knowledge, as directly making him miserable; and appears to be no otherwise consistent with benevolence to that being, than upon supposition, that superior happiness is conferred upon him afterwards. Now this removes the difficulty in the case of necessity, as well as of free-will, in the eye of reason, of an Infinite Being; and clashes less and less without limits with the imagination, as we advance in intellect, disinterestedness, and absolute resignation to God.

If it be said, that God could not but bestow free-will upon his creatures, I answer, that this is *gratis dictum*, there not being the least appearance of evidence for it; also, that it is making God subject to a necessity superior to himself, which would be to raise a greater difficulty than it solves. And, upon the whole, we may conclude, that the supposition of free-will, or liberty, in the philosophical sense, does not at all help us to account for the origin of evil.

Fourthly, Since free-will cannot account for finite evil, much less can it account for infinite, *i. e.* for the eternity of punishment. And indeed many, who receive free-will, do, however, see its insufficiency for this purpose, and, in consequence thereof, believe that the punishments of a future state will not be eternal. It is true, indeed, that the arguments against the eternity of

punishment are shorter, stronger, and clearer, upon the supposition of necessity, of God's being the real, ultimate author of all actions, than upon the supposition of free-will. But then this seems, if all things be duly considered, to be rather a presumption in favour of the doctrine of necessity, than otherwise.

The invention and application of the hypothesis of free-will, for the vindication of the divine benevolence, has probably arisen from the application of what passes in human affairs, in too strict a manner, to the relation between the Creator and his creatures; *i. e.* to an anthropomorphism of too gross a kind. Thus the actions of a son are free, in respect of his father; *i. e.* though the father can and does influence the son in many things, yet the son's actions depend upon many circumstances, impressions, associations, &c. in which the father has no concern. It will, therefore, be a sufficient vindication of the father's benevolence to the son, if he has taken care that the son suffers nothing from the things over which the father has power. What evils happen to the son, from quarters where the son is free in respect of his father, *i. e.* uninfluenced by him, these are no ways to be referred to the father. Now, it is very natural for humble and pious men, in considering the sins and miseries of mankind, to suppose that we have some such powers independent of God; and that all the evil, which happens to each person, is to be derived from these independent powers. But then this notion should not be hastily and blindly embraced and maintained, without an examination of the fact, and of the consistency of such a notion with piety, in other respects. The first of these points I have already considered in the foregoing part of this work; the last I shall now consider in the following proposition.

PROP. XVI.—*The natural Attributes of God, or his infinite Power and Knowledge, exclude the Possibility of Free-will in the philosophical Sense.*

FOR, to suppose that man has a power independent of God, is to suppose that God's power does not extend to all things, *i. e.* is not infinite. If it be said, that the power itself depends upon God, but the exertion of it upon man, the same difficulty will recur: since the exertion does not depend upon God, there will be something produced in the world, which is not the effect of his power; *i. e.* his power will not extend to all things, consequently not be infinite. And the same thing holds, if we refine farther, and proceed to the exertion of the exertion, &c. If this depend upon man, God's power will be limited by man's; if upon God, we return to the hypothesis of necessity, and of God's being the author of all things. However, the simplest and clearest way is to suppose, that power, and the exertion of power, are one and the same thing; for power is never known but by its actual exertion, *i. e.* is no power till it be exerted.

If, indeed, we say that man's actions depend both upon God and himself, this seems at first sight to solve the difficulty. Since they depend upon God, his power may be infinite; since they depend on man, they may be ascribed to *him*. But then the thing in man on which they depend, call it what you please, must either depend upon God or not; if it does, necessity returns; if not, God's infinite power is infringed. And the same thing will hold, as it appears to me, in any other way of stating this matter.

Again, To suppose that a man may do either the action *A*, or its opposite *a*, the previous circumstances remaining the same, is to suppose that one of them may arise without a cause; for the same previous circumstances cannot be the cause of the two opposite effects. Now, if any thing can arise without a cause, all things may, by parity of reason; which is contrary to the first proposition of this chapter, or to the common foundation upon which writers have erected their arguments for the being and attributes of God. To say, that free-will is the cause, is an identical proposition; since it is saying, that the power of doing different things, the previous circumstances remaining the same, is the cause that this may be done, *viz.* that either *A* or *a* may follow the same previous circumstances. Or, if we put for philosophical free-will the power of doing things without a cause, it will be a word of nearly the same import as chance. For chance is the ignorance or denial of a cause. It will therefore be as unfit to ascribe a real casualty to free-will as to chance.

And as free-will is inconsistent with the infinite power of God, so it is with his infinite knowledge also. For infinite knowledge must include the knowledge of all future things, as well as of all past and present ones. Besides, past, present, and future, are all present with respect to God, as has been observed before. Infinite knowledge must therefore include prescience. But free-will does not allow of prescience. Knowledge of all kinds presupposes the certainty of the thing known; *i. e.* presupposes that it is determined in respect of time, place, manner, &c. *i. e.* presupposes it to be necessary. Thus, if we consider any thing as known certainly, or certain simply, such as a mathematical truth, a past fact, &c. we shall find it to be necessary, and that it cannot be otherwise than it now is, or was formerly; which is the contrary to what is supposed of the actions of creatures endowed with free-will. These actions, therefore, cannot be known or foreknown, not being the objects of knowledge.

The maintainers of necessity do indeed deny, that there is any such thing as uncertainty at all; unless as far as this is put relatively for the limitation of knowledge in any being, so that the thing called uncertain may or may not be, for any thing that this being knows to the contrary. But if they do, for argument's sake, allow such a thing as absolute uncertainty, *i. e.* that a thing either may or may not be, it is plain, that this absolute

uncertainty must include the relative, *i. e.* exclude knowledge and foreknowledge. That action of *B* which either may or may not be, cannot be known certainly to be by *A*, because it may not be; it cannot be known not to be, because it may be. Suppose *A* to make conjectures concerning any future action of *B*. Then this action may or may not be, for any thing *A* knows to the contrary; it also may or may not be in itself, provided there be any such thing as absolute uncertainty. Suppose *A*'s conjecture to pass into a well-grounded probability of a high degree, that the action will happen, then both the relative and absolute *may not*, are reduced to narrow limits. Suppose *A*'s conjectures to arise to knowledge or certainty, then both the relative and absolute *may not* vanish. *A* cannot know, or be certain, that a thing will happen, at the same time that it may or may not happen, for any thing that he knows to the contrary; nor can a thing be relatively certain, and absolutely uncertain. *A*'s foreknowledge does therefore imply relative certainty; this requires absolute certainty; and absolute certainty is in express terms opposite to philosophical free-will. Foreknowledge is therefore inconsistent with free-will; or rather free-will, if it were possible, would exclude foreknowledge. It is not therefore possible.

Nor does it alter the case here to allege, that God's infinite knowledge must extend infinitely farther than man's, and, consequently, may extend to things uncertain in themselves, since the very terms *knowledge* and *uncertain* are inconsistent. To make them consistent we must affix some new and different sense to one of them, which would be to give up either the divine foreknowledge or free-will in reality, while we pretend in words to maintain them. If God's knowledge be supposed to differ so much from man's in this simple essential circumstance, that the certainty of it does not imply the certainty of the thing known, we lose all conception of it. And if the same liberties were used with the divine power and benevolence, we should lose all conception of the divine nature.

To which it may be added, that the reasoning in the last paragraph but one, concerning the knowledge of the being *A*, is not at all affected, or altered, by his rank, as to intelligence. Suppose his intellectual capacities to be greater and greater perpetually, still all things remain precisely the same, without the least variation. They will therefore, according to the analogy of ultimate ratios, remain precisely the same, though his knowledge be supposed infinite. It follows, therefore, that God's infinite and certain knowledge, or his foreknowledge, is as inconsistent with philosophical free-will, as man's finite, but certain knowledge or foreknowledge.

CHAP. II.

THE TRUTH OF THE CHRISTIAN RELIGION.

To believe the Christian religion, is to believe that Moses and the prophets, Christ and his apostles, were endued with divine authority; that they had a commission from God to act and teach as they did, and that he will verify their declarations concerning future things, and especially those concerning a future life, by the event; or, in other words, it is to receive the Scriptures as our rule of life, and the foundation of all our hopes and fears. And as all those who regulate their faith and practice by the Scriptures are Christians; so all those who disclaim that name, and pass under the general title of unbelievers, do also disavow this regard to the Scriptures. But there are various classes of unbelievers. Some appear to treat the Scriptures as mere forgeries; others allow them to be the genuine writings of those whose names they bear, but suppose them to abound with fictions, not only in the miraculous, but also in the common part of the history; others, again, allow this part, but reject that; and, lastly, there are others who seem to allow the truth of the principal facts, both common and miraculous, contained in the Scriptures, and yet still call in question its divine authority, as a rule of life, and an evidence of a happy futurity under Christ our Saviour and King. He, therefore, that would satisfy himself or others in the truth of the christian religion, as opposed by these several classes of unbelievers, must inquire into these three things:

First, The genuineness of the books of the Old and New Testaments.

Secondly, The truth of the principal facts contained in them, both common and miraculous. And,

Thirdly, Their divine authority.

I will endeavour, therefore, to state some of the chief evidences for each of these important points, having first premised three preparatory propositions, or lemmas, whereby the evidence for any one of them may be transferred upon the other two.

PROP. XVII.—*The Genuineness of the Scriptures proves the Truth of the principal Facts contained in them.*

FOR, first, It is very rare to meet with any genuine writings of the historical kind, in which the principal facts are not true; unless where both the motives which engaged the author to falsify, and the circumstances which gave some plausibility to the fiction, are apparent; neither of which can be alleged in the present case with any colour of reason. Where the writer of a history appears to the world as such, not only his moral sense, but his regard to his character and his interest, are strong motives not to falsify in notorious matters; he must therefore have stronger motives from the opposite quarter, and also a favourable conjuncture of circumstances, before he can attempt this.

Secondly, As this is rare in general, so it is much more rare, where the writer treats of things that happened in his own time, and under his own cognizance or direction, and communicates his history to persons under the same circumstances. All which may be said of the writers of the Scripture history.

That this and the following arguments may be applied with more ease and clearness, I will here, in one view, refer the books of the Old and New Testaments to their proper authors. I suppose then, that the Pentateuch consists of the writings of Moses, put together by Samuel, with a very few additions; that the books of Joshua and Judges were, in like manner, collected by him; and the book of Ruth, with the first part of the first book of Samuel, written by him; that the latter part of the first book of Samuel, and the second book, were written by the prophets who succeeded Samuel, suppose Nathan and Gad; that the books of Kings and Chronicles are extracts from the records of the succeeding prophets concerning their own times, and from the public genealogical tables, made by Ezra; that the books of Ezra and Nehemiah are collections of like records, some written by Ezra and Nehemiah, and some by their predecessors; that the book of Esther was written by some eminent Jew, in or near the times of the transaction there recorded, perhaps Mordecai; the book of Job by a Jew of an uncertain time; the Psalms by David, and other pious persons; the books of Proverbs and Canticles by Solomon; the book of Ecclesiastes by Solomon, or perhaps by a Jew of later times, speaking in his person, but not with an intention to make him pass for the author; the prophecies by the prophets whose names they bear; and the books of the New Testament by the persons to whom they are usually ascribed. There are many internal evidences, and in the case of the New Testament many external evidences also by which these books may be shewn to belong to the authors here named. Or, if there be any doubts, they are merely of a critical nature, and do not at all affect the genuineness of the books, nor alter the appli-

cation of these arguments, or not materially. Thus, if the epistle to the Hebrews be supposed written, not by St. Paul, but by Clement or Barnabas, or any other of their cotemporaries, the evidence therein given to the miracles performed by Christ, and his followers, will not be at all invalidated thereby.

Thirdly, The great importance of the facts mentioned in the Scriptures makes it still more improbable, that the several authors should either have attempted to falsify, or have succeeded in such an attempt. This is an argument for the truth of the facts, which proves the genuineness of the books at the same time, as I shall shew below in a distinct proposition. However the truth of the facts is inferred more directly from their importance, if the genuineness of the Scriptures be previously allowed. The same thing may be observed of the great number of particular circumstances of time, place, persons, &c. mentioned in the Scriptures, and of the harmony of the books with themselves, and with each other. These are arguments both for the genuineness of the books, and truth of the facts distinctly considered, and also arguments for deducing the truth from the genuineness. And indeed the arguments for the general truth of the history of any age or nation, where regular records have been kept, are so interwoven together, and support each other in such a variety of ways, that it is extremely difficult to keep the ideas of them distinct, not to anticipate, and not to prove more than the exactness of method requires one to prove. Or, in other words, the inconsistency of the contrary suppositions is so great, that they can scarce stand long enough to be confuted. Let any one try this in the history of France or England, Greece or Rome.

Fourthly, If the books of the Old and New Testaments were written by the persons to whom they were ascribed above, *i. e.* if they be genuine, the moral characters of these writers afford the strongest assurance, that the facts asserted by them are true. Falsehoods and frauds of a common nature shock the moral sense of common men, and are rarely met with except in persons of abandoned characters: How inconsistent then must those of the most glaring and impious nature be with the highest moral characters! That such characters are due to the sacred writers, appears from the writings themselves by an internal evidence; but there is also strong external evidence in many cases; and indeed this point is allowed in general by unbelievers. The sufferings which several of the writers underwent both in life and death, in attestation of the facts delivered by them, is a particular argument in favour of these.

Fifthly, The arguments here alleged for proving the truth of the scripture history from the genuineness of the books, are as conclusive in respect of the miraculous facts, as of the common ones. But besides this we may observe, that if we allow the genuineness of the books to be a sufficient evidence of the

common facts mentioned in them, the miraculous facts must be allowed also, from their close connexion with the common ones. It is necessary to admit both or neither. It is not to be conceived, that Moses should have delivered the Israelites from their slavery in Egypt, or conducted them through the wilderness for forty years, at all, in such manner as the common history represents, unless we suppose the miraculous facts intermixed with it to be true also. In like manner, the fame of Christ's miracles, the multitudes which followed him, the adherence of his disciples, the jealousy and hatred of the chief priests, scribes, and pharisees, with many other facts of a common nature, are impossible to be accounted for, unless we allow, that he did really work miracles. And the same observations hold in general of the other parts of the scripture history.

Sixthly, There is even a particular argument in favour of the miraculous part of the scripture history, to be drawn from the reluctance of mankind to receive miraculous facts. It is true that this reluctance is greater in some ages and nations than in others, and probable reasons may be assigned why this reluctance was, in general, less in ancient times than in the present (which, however, are presumptions that some real miracles were then wrought :) but it must always be considerable from the very frame of the human mind, and would be particularly so amongst the Jews at the time of Christ's appearance, as they had then been without miracles for four hundred years, or more. Now this reluctance must make both the writers and readers very much upon their guard; and if it be now one of the chief prejudices against revealed religion, as unbelievers unanimously assert, it is but reasonable to allow also, that it would be a strong check upon the publication of a miraculous history at or near the time when the miracles were said to be performed; *i. e.* it will be a strong confirmation of such an history, if its genuineness be granted previously.

And, upon the whole, we may certainly conclude, that the principal facts, both common and miraculous, mentioned in the Scriptures, must be true, if their genuineness be allowed. The objection against all miraculous facts will be considered below, after the other arguments for the truth of the scripture miracles have been alleged.

The converse of this proposition is also true; *i. e.* If the principal facts mentioned in the Scriptures be true, they must be genuine writings. And though this converse proposition may, at first sight, appear to be of little importance for the establishment of Christianity, inasmuch as the genuineness of the Scriptures is only made use of as a medium whereby to prove the truth of the facts mentioned in them, yet it will be found otherwise upon farther examination. For there are many evidences for the truth of particular facts mentioned in the Scriptures, such, for instance, as those taken from natural history, and the

cotemporary profane history, which no ways presuppose, but, on the contrary, prove the genuineness of the Scriptures; and this genuineness thus proved, may, by the arguments alleged under this proposition, be extended to infer the truth of the rest of the facts. Which is not to argue in a circle, and to prove the truth of the scripture history, from its truth; but to prove the truth of those facts, which are not attested by natural or civil history, from those which are, by the medium of the genuineness of the Scriptures.

PROP. XVIII.—*The Genuineness of the Scriptures proves their Divine Authority.*

THE truth of this proposition, as it respects the book of Daniel, seems to have been acknowledged by Porphyry, inasmuch as he could no ways invalidate the divine authority of this book, implied by the accomplishment of the prophecies therein delivered, but by asserting, that they were written after the event, *i. e.* were forgeries. But the same thing holds of many of the other books of the Old and New Testaments, many of them having unquestionable evidences of the divine foreknowledge, if they be allowed genuine. I reserve the prophetic evidences to be discussed hereafter, and therefore shall only suggest the following instances here, in order to illustrate the proposition; *viz.* Moses's prophecy concerning the captivity of the Israelites, of a state not yet erected; Isaiah's concerning Cyrus; Jeremiah's concerning the duration of the Babylonish captivity; Christ's concerning the destruction of Jerusalem, and the captivity that was to follow; St. John's concerning the great corruption of the christian church; and Daniel's concerning the fourth empire in its declension; which last was extant in Porphyry's time at least, *i. e.* before the events which it so fitly represents.

The same thing follows from the sublimity and excellence of the doctrines contained in the Scriptures. These no ways suit the supposed authors, *i. e.* the ages when they lived, their educations or occupations; and therefore, if they were the real authors, there is a necessity of admitting the divine assistance.

The converse of this proposition, *viz.* that the divine authority of the Scriptures infers their genuineness, will, I suppose, be readily acknowledged by all. And it may be used for the same purposes as the converse of the last. For there are several evidences for the divine authority of the Scriptures, which are direct and immediate, and prior to the consideration both of their genuineness, and of the truth of the facts contained in them. Of this kind is the character of Christ, as it may be collected from his discourses and actions related in the gospels. The great and manifest superiority of this to all other characters real and fictitious, proves, at once, his divine mission, exclusively of all other considerations. Suppose now the genuineness of St. Luke's

gospel to be deduced in this way, the genuineness of the Acts of the Apostles may be deduced from it, and of St. Paul's Epistles from the Acts, by the usual critical methods. And when the genuineness of the Acts of the Apostles, and St. Paul's Epistles, is thus deduced, the truth of the facts mentioned in them will follow from it by the last proposition; and their divine authority by this.

PROP. XIX.—*The Truth of the principal Facts contained in the Scriptures proves their Divine Authority.*

THIS proposition may be proved two ways; First, exclusively of the evidences of natural religion, such as those delivered in the last chapter; and, Secondly, from the previous establishment of the great truths of natural religion. And, First,

It is evident, that the great power, knowledge and benevolence, which appeared in Christ, the prophets, and apostles, according to the Scripture accounts, do, as it were, command assent and submission from all those who receive these accounts as historical truths; and that, though they are not able to deduce, or have not, in fact, deduced the evidences of natural religion; nay, though they should have many doubts about them. The frame of the human mind is such, that the scripture history, allowed to be true, must convince us, that Christ, the prophets, and apostles, were endued with a power greater than human, and acted by the authority of a being of the highest wisdom and goodness.

Secondly, If natural religion be previously established, the truth of the principal facts of the Scriptures proves their divine authority in an easier and more convincing manner.

For, First, The power shewn in the miracles wrought by Christ, the prophets, and apostles, the knowledge in their prophecies, and their good moral characters, shews them to be, in an eminent manner, the children, servants, and messengers, of Him, who is now previously acknowledged to be infinite in power, knowledge, and goodness.

Secondly, Christ, the prophets, and apostles, make an express claim to a divine mission. Now, it cannot be reconciled to God's moral attributes of justice, veracity, mercy, &c. that he should permit these persons to make such a claim falsely, and then endue them, or suffer them to be endued, with such credentials, as must support such a false claim. Their claim is not therefore a false one, if we admit their credentials; or, in other words, the truth of the principal facts mentioned in the Scriptures proves the divine mission of Christ, the prophets, and apostles, *i. e.* the divine authority of the Scriptures.

The same observations may be made upon the converse of this proposition, as upon those of the two last.

And thus the genuineness of the Scriptures, the truth of the principal facts contained in them, and their divine authority,

appear to be so connected with each other, that any one being established upon independent principles, the other two may be inferred from it. The first and second of these points are, indeed, more evidently subservient to the last, than the last is to them; for, if the last be allowed, it is at once all that the believer contends for; whereas some persons appear to admit, or not to reject, the first, or even the second, and yet are ranked under the title of unbelievers. It is necessary to shew to such persons, that the first and second infer each other mutually, and both of them the last; and it may be of some use to shew, that the last infers the two first in such a way as to cast some light upon itself, without arguing in a circle; the divine authority of one book being made to infer the genuineness of another, or the facts contained in it, *i. e.* its divine authority also.

Here it may not be amiss to say something concerning the divine inspiration of the Scriptures. Now there are three different suppositions, which may be made concerning this point.

The first and lowest is, That all the passages delivered by Moses and the prophets, as coming from God, and by the evangelists, as the words of Christ, also the Revelation given to St. John in a divine vision, with all parallel portions of Scripture, must be considered as divinely inspired, and as having immediate divine authority; else we cannot allow even common authority to these books; but that the common history, the reasonings of the apostles from the Old Testament, and perhaps some of their opinions, may be considered as coming merely from themselves, and therefore, though highly to be regarded, are not of unquestionable authority. The arguments for this hypothesis may be, that since the Scriptures have suffered by transcribers, like other books, a perfect exactness in the original, as to minute particulars (in which alone it has suffered, or could suffer, from transcribers), is needless; that Moses and the prophets, the evangelists and apostles, had natural talents for writing history, applying the Scriptures, reasoning, and delivering their opinions; and that God works by natural means, where there are such; that the apostles were ignorant of the true extent of Christ's kingdom for a considerable time after his resurrection, and perhaps mistaken about his second coming; that God might intend that nothing in this world should be perfect, our blessed Lord excepted; that some historical facts seem difficult to be reconciled to one another, and some applications of passages from the Old Testament by the writers of the New, with their reasonings thereon, inconclusive and unsatisfactory; that the writers themselves no where lay claim to infallibility, when speaking from themselves; and that Hermas, Clemens Romanus, and Barnabas, who were apostolical persons, seem evidently to have reasoned in an inconclusive manner.

The second hypothesis is, that historical incidents of small moment, with matters of a nature foreign to religion, may indeed not have divine authority; but that all the rest of the Scriptures,

the reasonings, the application of the prophecies, and even the doctrines of inferior note, must be inspired; else what can be meant by the gifts of the Spirit, particularly that of prophecy, *i. e.* of instructing others? How can Christ's promise of the Comforter, who should lead his disciples into *all truth*, be fulfilled? Will not the very essentials of religion, the divine mission of Christ, Providence, and a future state, be weakened by thus supposing the sacred writers to be mistaken in religious points? And though the history and the reasonings of the Scriptures have the marks of being written in the same manner as other books, *i. e.* may seem not to be inspired, yet a secret influence might conduct the writers in every thing of moment, even when they did not perceive it, or reflect upon it themselves; it being evident from obvious reasonings, as well as from the foregoing theory, that the natural workings of the mind are not to be distinguished from those, which a Being that has a sufficient power over our intellectual frame, might excite in us.

The third and last hypothesis is, That the whole Scriptures are inspired, even the most minute historical passages, the salutations, incidental mention of common affairs, &c. The arguments in favour of this hypothesis are, that many parts of Scripture appear to have double, or perhaps manifold, senses; that not one jot or tittle of the law (*i. e.* of the whole Scriptures of both the Old and New Testaments, in an enlarged way of interpretation, which, however, seems justifiable by parallel instances) shall perish; that the Bible, *i. e.* the book of books, as we now have it, appears to have been remarkably distinguished by Providence from all other writings, even of good Jews and Christians, and to admit of a vindication in respect of small difficulties, and small seeming inconsistencies, as well as of great ones, every day more and more as we advance in knowledge; and that effects of the same kind with divine inspiration, *viz.* the working of miracles, and the gift of prophecy, subsisted during the times of the authors of the books of the Old and New Testaments, and even in all, or nearly all, of these writers; also, that they extended, in some cases, to very minute things.

I will not presume to determine which of these three suppositions approaches nearest to the truth. The following propositions will, I hope, establish the first of them at least, and prove the genuineness of the Scriptures, the truth of the facts contained in them, and their divine authority, to such a degree, as that we need not fear to make them the rule of our lives, and the ground of our future expectations; which is all that is absolutely necessary for the proof of the Christian religion, and the satisfaction and comfort of religious persons. I even believe that the following evidences favour the second hypothesis strongly, and exclude all errors and imperfections of note; nay, I am inclined to believe, that serious, inquisitive men can scarce rest there, but will be led, by the successive clearing of difficulties, and

unfolding of the most wonderful truths, to believe the whole Scriptures to be inspired, and to abound with numberless uses and applications, of which we yet know nothing. Let future ages determine. The evidently miraculous nature of one part, *viz.* the prophetic, disposes the mind to believe the whole to be far above human invention, or even penetration, till such time as our understandings shall be farther opened by the events which are to precede the second coming of Christ. In the mean while, let critics and learned men of all kinds have full liberty to examine the sacred books; and let us be sparing in our censures of each other. *Let us judge nothing before the time, until the Lord come; and then shall every man have praise of God.* Sobriety of mind, humility, and piety, are requisite in the pursuit of knowledge of every kind, and much more in that of sacred. I have here endeavoured to be impartial to each hypothesis, and just to hint what I apprehend each party would or might say in defence of their own. However, *they are all brethren*, and ought not to *fall out by the way*.

PROP. XX.—*The Manner in which the Books of the Old and New Testaments have been handed down from Age to Age, proves both their Genuineness, and the Truth of the principal Facts contained in them.*

FOR, First, It resembles the manner in which all other genuine books and true histories have been conveyed down to posterity. As the writings of the Greek and Roman poets, orators, philosophers, and historians, were esteemed by these nations to be transmitted to them by their forefathers in a continued succession, from the times when the respective authors lived, so have the books of the Old Testament by the Jewish nation, and those of the New by the Christians; and it is an additional evidence in the last case, that the primitive Christians were not a distinct nation, but a great multitude of people dispersed through all the nations of the Roman empire, and even extending itself beyond the bounds of that empire. As the Greeks and Romans always believed the principal facts of their historical books, so the Jews and Christians did more, and never seem to have doubted of the truth of any part of theirs. In short, whatever can be said of the traditional authority due to the Greek and Roman writers, something analogous to this, and, for the most part, of greater weight, may be urged for the Jewish and Christian. Now, I suppose that all sober-minded men admit the books usually ascribed to the Greek and Roman historians, philosophers, &c. to be genuine, and the principal facts related or alluded to in them to be true, and that one chief evidence for this is the general traditionary one here recited. They ought, therefore, to pay the same regard to the books of the Old and New Testaments, since there are the same or greater reasons for it.

Secondly, If we reconsider the circumstances recited in the last paragraph, it will appear, that these traditionary evidences are sufficient ones; and we shall have a real argument, as well as one *ad hominem*, for receiving books so handed down to us. For it is not to be conceived, that whole nations should either be imposed upon themselves, or concur to deceive others, by forgeries of books or facts. These books and facts must, therefore, in general, be genuine and true; and it is a strong additional evidence of this, that all nations must be jealous of forgeries for the same reasons that we are.

Here it may be objected, that as we reject the prodigies related by the Greek and Roman writers, though we admit the common history, so we ought also to reject the scripture miracles. To this I answer,

First, That the scripture history is supported by far stronger evidences than the Greek or Roman, as will appear in the following propositions.

Secondly, That many of the scripture miracles are related by eye-witnesses, and were of a public nature, of long duration, attended by great and lasting effects, inseparably connected with the common history, and evidently suitable to our notions of a wise and good Providence, which cannot be said of those related by the pagan writers.

Thirdly, That the scripture miracles not attended by these cogent circumstances are supported by their connexion with such as are; and that after we have admitted these, there remains no longer any presumption against those from their miraculous nature.

Fourthly, If there be any small number found amongst the pagan miracles, attested by such like evidences as the principal ones for the scripture miracles, I do not see how they can be rejected; but it will not follow that the scripture miracles are false, because some of the pagan ones are true.

PROP. XXI.—*The great Importance of the Histories, Precepts, Promises, Threatenings, and Prophecies contained in the Scriptures, are Evidences both of their Genuineness, and of the Truth of the principal Facts mentioned in them.*

THIS is one of the instances in which the evidences for the Scriptures are superior, beyond comparison, to those for any other ancient books. Let us take a short review of this importance in its several particulars.

The history of the creation, fall, deluge, longevity of the patriarchs, dispersion of mankind, calling of Abraham, descent of Jacob with his family into Egypt, and the precepts of abstaining from blood, and of circumcision, were of so much concern, either to mankind in general, or to the Israelites in particular, and some of them of so extraordinary a nature, as that it could

not be an indifferent matter to the people amongst whom the account given of them in Genesis was first published, whether they received them or not. Suppose this account to be first published amongst the Israelites by Moses, and also to be then confirmed by clear, universal, uninterrupted tradition (which is possible and probable, according to the history itself), and it will be easy to conceive, upon this true supposition, how this account should be handed down from age to age amongst the Jews, and received by them as indubitable. Suppose this account to be false, *i. e.* suppose that there were no such evidences and vestiges of these histories and precepts, and it will be difficult to conceive how this could have happened, let the time of publication be as it will. If early, the people would reject the account at once for want of a clear tradition, which the account itself would give them reason to expect. If late, it would be natural to inquire how the author came to be informed of things never known before to others.

If it be said, that he delivered them as communicated to him by revelation (which yet cannot well be said on account of the many references in Genesis to the remaining vestiges of the things related), these surprising, interesting particulars would at least be an embarrassment upon his fictitious credentials, and engage his cotemporaries to look narrowly into them.

If it be said, that there were many cosmogonies and theogonies current amongst the pagans, which yet are evidently fictions; I answer, that these were, in general, regarded only as amusing fictions; however, that they had some truths in them, either expressed in plain words, or concealed in figures; and that their agreement with the book of Genesis, as far as they are consistent with one another, or have any appearance of truth, is a remarkable evidence in favour of this book. It is endless to make all the possible suppositions and objections of this kind; but it appears to me, that the more are made, the more will the truth and genuineness of the Scriptures be established thereby.

It ought to be added, in relation to the precepts of abstaining from blood, and circumcision, before-mentioned, that if the first was common to mankind, or was known to have been so, the last peculiar to the descendants of Abraham, at the time of the publication of the book of Genesis, this confirms it; if otherwise, would contribute to make it rejected. If neither the practices themselves, nor any vestiges of them subsisted at all, the book must be rejected. The difficulty of deducing these practices from the principles of human nature ought to be considered here; as it tends to prove their divine original, agreeably to the accounts given of them in Genesis.

Let us next come to the law of Moses. This was extremely burthensome, expensive, severe, particularly upon the crime of idolatry, to which all mankind were then extravagantly prone, and absurd, according to the common judgment of mankind, in

the instances of forbidding to provide themselves with horses for war, and commanding all the males of the whole nation to appear at Jerusalem three times in a year. At the same time, it claims a divine authority every where, and appeals to facts of the most notorious kinds, and to customs and ceremonies of the most peculiar nature, as the memorials of these facts. We cannot conceive, then, that any nation, with such motives to reject, and such opportunities of detecting the forgery of the books of Exodus, Leviticus, Numbers, and Deuteronomy, should yet receive them, and submit to this heavy yoke. That they should often throw it off in part, and for a time, and rebel against the divine authority of their law, though sufficiently evidenced, is easily to be accounted for from what we see and feel in ourselves and others every day; but that they should ever return and repent, ever submit to it, unless it had divine authority, is utterly incredible. It was not a matter of such small importance, as that they could content themselves with a superficial examination, with a less examination than would be sufficient to detect so notorious a forgery; and this holds, at whatever time we suppose these books to be published.

That the Jews did thus submit to the law of Moses, is evident from the books of the Old and New Testaments, if we allow them the least truth and genuineness, or even from profane writers; nay, I may say, from the present observance of it by the Jews scattered through all the kingdoms of the world.

If it be said, that other nations have ascribed divine authority to their lawgivers, and submitted to very severe laws; I answer, first, that the pretences of lawgivers amongst the pagans to inspiration, and the submission of the people to them, may be accounted for in the degree in which they are found, from the then circumstances of things, without having recourse to real inspiration; and particularly, that if we admit the patriarchal revelations related and intimated by Moses, and his own divine legation, it will appear, that the heathen lawgivers copied after these; which is a strong argument for admitting them. Secondly, that there is no instance amongst the pagans, of a body of laws being produced at once, and remaining without addition afterwards; but that they were compiled by degrees, according to the exigencies of the state, the prevalence of a particular faction, or the authority of some particular persons, who were all styled lawgivers, as Draco and Solon at Athens; that they were made, in general, not to curb, but humour, the genius of the people; and were afterwards repealed and altered from the same causes: whereas the body politic of the Israelites took upon itself a complete form at once, and has preserved this form in great measure to the present time, and that under the highest external disadvantages; which is an instance quite without parallel, and shews the great opinion which they had of their law, *i. e.* its great importance to them.

If it be said, that the laws of the Israelites were not perhaps imposed at once, but grew up by degrees, as in other nations, this will make the difficulty of receiving the books of Exodus, Leviticus, Numbers, and Deuteronomy, in which the contrary, with all the particular circumstances, is asserted, greater than ever. In short, of all the fictions or forgeries that can happen amongst any people, the most improbable is that of their body of civil laws; and it seems to be utterly impossible in the case of the law of Moses.

The next part of the Scriptures, whose importance we are to consider, is the history contained in the books of Joshua, Judges, Ruth, Samuel, Kings, Chronicles, Ezra, and Nehemiah, and extending from the death of Moses to the re-establishment of the Jews after the Babylonish captivity, by Ezra and Nehemiah. Now, in this history are the following important facts, most of which must be supposed to leave such vestiges of themselves, either external visible ones, or internal in the minds and memories of the people, as would verify them, if true; make them be rejected, if false. The conquest of the land of Canaan, the division of it, and the appointment of cities for the priests and Levites by Joshua; the frequent slaveries of the Israelites to the neighbouring kings, and their deliverance by the Judges; the erection of a kingdom by Samuel; the translation of this kingdom from Saul's family to David, with his conquests; the glory of Solomon's kingdom; the building of the temple; the division of the kingdom; the idolatrous worship set up at Dan and Bethel; the captivity of the Israelites by the kings of Assyria; the captivity of the Jews by Nebuchadnezzar; the destruction of their temple; their return under Cyrus, rebuilding the temple under Darius Hystaspes, and re-establishment under Artaxerxes Longimanus, by Ezra and Nehemiah; these events are some of them the most glorious, some of them the most shameful, that can well happen to any people. How can we reconcile forgeries of such opposite kinds, and especially as they are interwoven together? But, indeed, the facts are of such consequence, notoriety, and permanency, in their effects, that neither could any particular persons amongst the Israelites first project the design of feigning them, nor their own people concur with such a design, nor the neighbouring nations permit the fiction to pass. Nothing could make a jealous multitude amongst the Israelites, or neighbouring nations acquiesce, but the invincible evidence of the facts here alleged. And the same observations hold of numberless other facts of lesser note, which it would be tedious to recount; and of miraculous facts as much, or rather more than others. Besides which, it is to be noted, that all these have such various necessary connexions with each other, that they cannot be separated, as has been already remarked.

And all this will, I presume, be readily acknowledged, upon supposition that the several books were published in or near the

times of the facts therein recorded: But, say the objectors, this will not hold in so strong a manner, if the books be published after these times. Let us take an extreme case, then, and suppose all these historical books forged by Ezra. But this is evidently impossible. Things of so important and notorious a kind, so glorious and so shameful to the people, for whose sake they were forged, would have been rejected with the utmost indignation, unless there were the strongest and most genuine footsteps of these things already amongst the people. They were therefore in part true. But many additions were made by Ezra, say the objectors. I answer, if these were of importance, the difficulty returns. If not, then all the important facts are true. Besides, what motive could any one have for making additions of no importance? Again, if there were any ancient writings extant, Ezra must either copy after them, which destroys the present supposition; or differ from and oppose them, which would betray him. If there were no such ancient writings, the people could not but inquire in matters of importance, for what reasons Ezra was so particular in things of which there was neither any memory, nor account in writing. If it be said, that the people did not regard what Ezra had thus forged, but let it pass uncontradicted; this is again to make the things of small or no importance. Besides, why should Ezra write, if no one would read or regard? Farther, Ezra must, like all other men, have friends, enemies, and rivals; and some or all of these would have been a check upon him, and a security against him in matters of importance.

If, instead of supposing Ezra to have forged all these books at once, we supposed them forged successively, one, two, or three centuries after the facts related; we shall, from this intermediate supposition, have (besides the difficulty of accounting for such a regular succession of impostures in matters so important) a mixture of the difficulties recited in the two preceding paragraphs, the sum total of which will be the same, or nearly the same, as in either of those cases. And upon the whole, the forgery of the annals of the Israelites appears to be impossible, as well as that of the body of their civil laws.

If it be said, that the histories and annals of other nations have many fictions and falsehoods in them; I answer, that the superior importance of the events which happened to the Jewish nation, and the miraculous nature of many of them, occasioned their being recorded at the then present times, in the way of simple narration, the command of God also concurring, as it seems; and that thus all addition, variety, and embellishment, was prevented: whereas the histories of the originals of other nations were not committed to writing till long after the events, after they had been corrupted and obscured by numberless fables and fictions, as is well known. There are many other circumstances peculiar to the Jewish history, which establish its truth even in the

minutest things, as I shall shew in the following propositions; and I hope the reader will see, in the progress of the argument, that the same method of reasoning which proves the Jewish history to be rigorously exact, proves also that the histories of other nations may be expected to be partly true, and partly false, as they are agreed to be by all learned and sober-minded men.

I pass over the books of Esther, Job, the Psalms, Proverbs, Ecclesiastes, and Canticles, as not having much relation to this proposition; and proceed to the consideration of the Prophecies.

These contain the most important precepts, promises, threatenings, and predictions, *i. e.* prophecies peculiarly so called, besides the indirect and incidental mention of the great events recorded in the historical books. And as they are full of the severest reproofs and denunciations against all ranks, king, governors, and great men subordinate to him, priests, prophets, and people, one cannot expect, that they should be favourably received by any, but those of the best moral characters; and these must be the first to detect and expose a forgery, if there was any. So that the prophecies, if they were forgeries, could not be able to stand so rigorous an examination as the importance of the case would prompt all ranks to. And here all the arguments before used to shew, that the historical books could neither be forged at the time of the facts, nor so late as Ezra's time, nor in any intermediate one, are applicable with the same, or even greater force. Besides which, it is to be observed of the predictions in particular, that, if they were published before the events, they could not be forgeries; if afterwards, there would not be wanting amongst the Jews many persons of the same disposition with Porphyry, and the present objectors to the genuineness of the prophecies, and the truth of the facts related or implied in them, who upon that supposition would have met with success, as Porphyry, and the ancient objectors would have done long ago, had their objections been solid. Infidelity is the natural and necessary product of human wickedness and weakness; we see it, in all other things, as well as in religion, whensoever the interests and passions of men are opposite to truth; and the present objectors to the truth of revealed religion may be assured, that the ancient ones, the murmuring Israelites in the wilderness, the rebellious Jews before Christ, and both Jews and Gentiles, since Christ, have done justice to their cause.

We come, in the last place, to consider the importance of the books of the New Testament. Whoever then received these in ancient times as genuine and true, must not only forsake all sinful pleasures, but expose himself to various hardships and dangers, and even to death itself. They had indeed a future glory promised to them, with which the sufferings of the present time were not worthy to be compared. But then this glory, being future, must be supported with the most incontestable

evidences; else it could have no power against the opposite motives; and both together must so rouse the mind, as to make men exert themselves to the uttermost, till they had received full satisfaction. Besides which it is to be observed, that even joy, and the greatness of an expectation, incline men to disbelieve, and to examine with a scrupulous exactness, as well as fear and dislike.

As to those who did not receive the doctrines of the New Testament, and the facts there related and implied, they would have sufficient motives to detect the forgery or falsehood, had there been any such. They were all condemned for their unbelief; many for their gross vices; the Jew for his darling partiality to his own nation, and ceremonial law: and the Gentile for his idolatry and polytheism; and the most dreadful punishments threatened to all in a future state. Now these were important charges, and alarming considerations, which, if they did not put men upon a fair examination, would, at least, make them desirous to find fault, to detect, and expose; and if they had discovered any fraud, to publish it with the utmost triumph. The books of the New Testament could not but be of so much importance to the unbelievers of the primitive times, as to excite them to vigilance and earnestness, in endeavouring to discredit and destroy them. All which is abundantly confirmed by the history of those times. And indeed cases of the same kind, though not of the same degree, occur now to daily observation, which the reader will do well to call to mind. Thus it comes to pass, on one hand, that frauds and impostures are crushed in the birth: and, on the other, that wicked men labour against the truth in the most unreasonable and inconsistent ways, and are led on from one degree of obstinacy, prevarication, and infatuation, to another, without limits.

It may be added here, That the persons reprov'd and condemn'd in the gospels, in the Acts of the Apostles, by St. Paul in his epistles, by St. Peter in his second epistle, by St. John and St. Jude in their epistles, and by St. John in the Revelation, *viz.* the five churches, and the Nicolaitanes, could not but endeavour to vindicate themselves. The books were all of a public nature, and these reproofs particularly so, as being intended to guard others.

I have now gone through the several parts of the Scripture, and shewn briefly how the importance of each would be a security against forgery and fiction in that part. I will now add some general evidences to the same purpose.

First, then, It is certain, that both Jews and Christians have undergone the severest persecutions and sufferings on account of their sacred books, and yet never could be prevailed with to deliver them up: which shews that they thought them of the highest importance, most genuine and true.

Secondly, The preservation of the law of Moses, which is

probably the first book that was ever written in any language, while so many others more modern have been lost, shews the great regard paid to it. The same holds in a less degree of most of the other books of the Old Testament, since most of them are ancients than the oldest Greek historians. And as the records of all the neighbouring nations are lost; we must suppose those of the Jews to have been preserved, from their importance, or some other such cause, as may be an equal evidence of their genuineness and truth.

Thirdly, The great importance of all the sacred books appears from the many early translations and paraphrases of them. The same translations and paraphrases must be an effectual means of securing their integrity and purity, if we could suppose any design to corrupt them.

Fourthly, The hesitation and difficulty with which a few books of the New Testament were received into the canon, shew the great care and concern of the primitive Christians, about the canon, *i. e.* the high importance of the books received into it; and are therefore a strong evidence, first, for the genuineness and truth of the books which were received without hesitation; and then for these others, since they were received universally at last.

Fifthly, The great religious hatred and animosity which subsisted between the Jews and Samaritans, and between several of the ancient sects amongst the Christians, shew of what importance they all thought their sacred books; and would make them watch over one another with a jealous eye.

PROP. XXII.—*The Language, Style, and Manner of Writing, used in the Books of the Old and New Testaments, are Arguments of their Genuineness.*

HERE I observe, First, That the Hebrew language, in which the Old Testament was written, being the language of an ancient people, and one that had little intercourse with their neighbours, and whose neighbours also spake a language that had great affinity with their own, would not change so fast as modern languages have done, since nations have been variously mixed with one another, and trade, arts, and sciences, greatly extended. Yet some changes there must be, in passing from the time of Moses to that of Malachi. Now, I apprehend, that the biblical Hebrew corresponds to this criterion with so much exactness, that a considerable argument may be deduced thence in favour of the genuineness of the books of the Old Testament.

Secondly, The books of the Old Testament have too considerable a diversity of style to be the work either of one Jew, (for a Jew he must be on account of the language,) or of any set of cotemporary Jews. If therefore they be all forgeries, there must be a succession of impostors in different ages, who have

concurrent to impose upon posterity, which is inconceivable. To suppose part forged, and part genuine, is very harsh; neither would this supposition, if admitted, be satisfactory.

Thirdly, The Hebrew language ceased to be spoken as a living language, soon after the time of the Babylonish captivity: but it would be difficult or impossible to forge any thing in it, after it was become a dead language. For there was no grammar made for the Hebrew till many ages after; and, as it is difficult to write in a dead language with exactness, even by the help of a grammar, so it seems impossible without it. All the books of the Old Testament must therefore be, nearly, as ancient as the Babylonish captivity; and, since they could not all be written in the same age, some must be considerably more ancient; which would bring us again to a succession of conspiring impostors.

Fourthly, This last remark may perhaps afford a new argument for the genuineness of the book of Daniel, if any were wanting. But indeed the Septuagint translation shews both this, and all the other books of the Old Testament, to have been considered as ancient books, soon after the times of Antiochus Epiphanes, at least.

Fifthly, There is a simplicity of style, and an unaffected manner of writing, in all the books of the Old Testament; which is a very strong evidence of their genuineness, even exclusively of the suitableness of this circumstance to the time of the supposed authors.

Sixthly, The style of the New Testament is also simple and unaffected, and perfectly suited to the time, places, and persons. Let it be observed farther, that the use of words and phrases is such, also the ideas, and method of reasoning, as that the books of the New Testament could be written by none but persons originally Jews; which would bring the inquiry into a little narrower compass, if there was any occasion for this.

One may also observe, that the narrations and precepts of both Old and New Testament are delivered without hesitation; the writers teach as having authority; which circumstance is peculiar to those, who have both a clear knowledge of what they deliver, and a perfect integrity of heart.

PROP. XXIII.—*The very great Number of particular Circumstances of Time, Place, Persons, &c. mentioned in the Scriptures, are Arguments both of their Genuineness and Truth.*

THAT the reader may understand what I mean by these particular circumstances, I will recite some of the principal heads, under which they may be classed.

There are then mentioned in the book of Genesis, the rivers of Paradise, the generations of the antediluvian patriarchs, the deluge with its circumstances, the place where the ark rested, the

building of the tower of Babel, the confusion of tongues, the dispersion of mankind, or the division of the earth amongst the posterity of Shem, Ham, and Japheth; the generations of the postdiluvian patriarchs, with the gradual shortening of human life after the flood; the sojournings of Abraham, Isaac, and Jacob, with many particulars of the state of Canaan, and the neighbouring countries, in their times; the destruction of Sodom and Gomorrah; the state of the land of Edom, both before and after Esau's time; and the descent of Jacob into Egypt, with the state of Egypt before Moses's time.

In the book of Exodus are the plagues of Egypt; the institution of the passover; the passage through the Red Sea, with the destruction of Pharaoh and his host there; the miracle of manna; the victory over the Amalekites; the solemn delivery of the law from Mount Sinai; many particular laws, both moral and ceremonial; the worship of the golden calf, and a very minute description of the tabernacle, priests' garments, ark, &c.

In Leviticus, we have a collection of ceremonial laws, with all their particularities, and an account of the deaths of Nadab and Abihu.

The book of Numbers contains the first and second numberings of the several tribes, with their genealogies, the peculiar offices of the three several families of the Levites, many ceremonial laws, the journeyings and encampments of the people in the wilderness during forty years, with the relation of some remarkable events which happened in this period; as, the searching of the land, the rebellion of Korah, the victories over Arad, Sihon, and Og, with the division of the kingdoms of the two last among the Gadites, Reubenites, and Manassites; the history of Balak and Balaam, and the victory over the Midianites, all described with the several particularities of time, place, and persons.

The book of Deuteronomy contains a recapitulation of many things contained in the three last books, with a second delivery of the law, chiefly the moral one, by Moses, upon the borders of Canaan, just before his death, with an account of this.

In the book of Joshua we have the passage over Jordan, the conquest of the land of Canaan, in detail, and the division of it among the tribes, including a minute geographical description.

The book of Judges recites a great variety of public transactions, with the private origin of some. In all, the names of times, places, and persons, both among the Israelites, and the neighbouring nations, are noted with particularity and simplicity.

In the book of Ruth is a very particular account of the genealogy of David, with several incidental circumstances.

The books of Samuel, Kings, Chronicles, Ezra, and Nehemiah, contain the transactions of the kings before the captivity, and governors afterwards, all delivered in the same circumstantial manner. And here the particular account of the regulations,

sacred and civil, established by David, and of the building of the temple by Solomon, the genealogies given in the beginning of the first book of Chronicles, and the lists of the persons who returned, sealed, &c. after the captivity, in the books of Ezra and Nehemiah, deserve especial notice, in the light in which we are now considering things.

The book of Esther contains a like account of a very remarkable event, with the institution of a festival in memory of it.

The book of Psalms mentions many historical facts in an incidental way; and this, with the books of Job, Proverbs, Ecclesiastes, and Canticles, allude to the manners and customs of ancient times in various ways.

In the Prophecies there are some historical relations; and in the other parts, the indirect mention of facts, times, places, and persons, is interwoven with the predictions in the most copious and circumstantial manner.

If we come to the New Testament, the same observations present themselves at first view. We have the names of friends and enemies, Jews, Greeks, and Romans, obscure and illustrious, the times, places, and circumstances of facts, specified directly, and alluded to indirectly, with various references to the customs and manners of those times.

Now here I observe, First, That, in fact, we do not ever find that forged or false accounts of things superabound thus in particularities. There is always some truth where there are considerable particularities related, and they always seem to bear some proportion to one another. Thus there is a great want of the particulars of time, place, and persons, in Manetho's account of the Egyptian dynasties, Ctesias's of the Assyrian kings, and those which the technical chronologers have given of the ancient kingdoms of Greece; and agreeably thereto, these accounts have much fiction and falsehood, with some truth: whereas Thucydides' history of the Peloponnesian war, and Cæsar's of the war in Gaul, in both which the particulars of time, place, and persons, are mentioned, are universally esteemed true to a great degree of exactness.

Secondly, A forger, or a relater of falsehoods, would be careful not to mention so great a number of particulars, since this would be to put into his reader's hands criterions whereby to detect him. Thus we may see one reason of the fact mentioned in the last paragraph, and which, in confirming that fact, confirms the proposition here to be proved.

Thirdly, A forger, or a relater of falsehoods, could scarce furnish out such lists of particulars. It is easy to conceive how faithful records kept from time to time, by persons concerned in the transactions, should contain such lists; nay, it is natural to expect them in this case, from that local memory which takes strong possession of the fancy in those who have been present at transactions; but it would be a work of the highest invention,

and greatest stretch of genius, to raise from nothing such numberless particularities, as are almost everywhere to be met with in the Scriptures. The account given of memory, imagination, and invention, in the foregoing part of these observations, sets this matter in a strong light.

There is a circumstance relating to the gospels, which deserves particular notice in this place. St. Matthew and St. John were apostles; and, therefore, since they accompanied Christ, must have this local memory of his journeyings and miracles. St. Mark was a Jew of Judæa, and a friend of St. Peter's; and, therefore, may either have had this local memory himself, or have written chiefly from St. Peter, who had. But St. Luke, being a proselyte of Antioch, not converted, perhaps, till several years after Christ's resurrection, and receiving his accounts from different eye-witnesses, as he says himself, could have no regard to that order of time, which a local memory would suggest. Let us see how the gospels answer to these positions. St. Matthew's then appears to be in exact order of time, and to be a regulator to St. Mark's and St. Luke's, shewing St. Mark's to be nearly so, but St. Luke's to have little or no regard to the order of time, in his account of Christ's ministry. St. John's Gospel is, like St. Matthew's, in order of time; but as he wrote after all the rest, and with a view only of recording some remarkable particulars, such as Christ's actions before he left Judæa to go to preach in Galilee, his disputes with the Jews of Jerusalem, and his discourses to the apostles at his last supper, there was less opportunity for his local memory to shew itself. However, his recording what past before Christ's going into Galilee might be in part from this cause, 'as St. Matthew's omission of it was probably from his want of local memory. For it appears that St. Matthew resided in Galilee; and that he was not converted till some time after Christ's coming thither to preach. Now this suitability of the four gospels to their reputed authors, in a circumstance of so subtle and recluse a nature, is quite inconsistent with the supposition of fiction or forgery. This remark is chiefly taken from Sir Isaac Newton's chapter concerning the times of the birth and passion of Christ, in his Comment on Daniel.

Fourthly, If we could suppose the persons who forged the books of the Old and New Testaments, to have furnished their readers with the great variety of particulars above-mentioned, notwithstanding the two reasons here alleged against it, we cannot, however, conceive, but that the persons of those times when the books were published, must, by the help of these criterions, have detected and exposed the forgeries or falsehoods. For these criterions are so attested by allowed facts, as at this time, and in this remote corner of the world, to establish the truth and genuineness of the Scriptures, as may appear even from this chapter, and much more from the writings

of commentators, sacred critics, and such other learned men, as have given the historical evidences for revealed religion in detail; and, by parity of reason, would suffice even now to detect the fraud, were there any: whence we may conclude, *à fortiori*, that they must have enabled the persons who were upon the spot, when the books were published, to do this; and the importance of many of these particulars considered under Prop. XXI. would furnish them with abundant motives for this purpose. And upon the whole I infer, that the very great number of particulars of time, place, persons, &c. mentioned in the Scriptures, is a proof of their genuineness and truth, even previously to the consideration of the agreement of these particulars with history, natural and civil, and with one another, of which I now proceed to treat.

PROP. XXIV.—*The Agreement of the Scriptures with History, natural and civil, is a Proof of their Genuineness and Truth.*

THUS the history of the fall agrees in an eminent manner both with the obvious facts of labour, sorrow, pain, and death, with what we see and feel every day, and with all our philosophical inquiries into the frame of the human mind, the nature of social life, and the origin of evil, as may appear from these papers amongst other writings of the same kind. The several powers of the little world within a man's own breast are at variance with one another, as well as those of the great world; we are utterly unable to give a complete solution of the origin of the evils which flow from these discords, and from the jarring of the elements of the natural world; and yet there are comfortable hopes, that all evil will be overpowered and annihilated at last, and that it has an entire subserviency to good really and ultimately; *i. e.* though *the serpent bruise our heel*, yet we shall *bruise its head*.

It cannot be denied, indeed, but that both the history of the creation, and that of the fall, are attended with great difficulties. But then they are not of such a kind as intimate them to be a fiction contrived by Moses. It is probable, that he set down the traditional account, such as he received it from his ancestors; and that this account contains the literal truth in short, though so concealed in certain particulars through its shortness, and some figurative expressions made use of, that we cannot yet, perhaps never shall, interpret it satisfactorily. However, Mr. Whiston's conjectures concerning the six days' creation seem to deserve the attention of future inquirers; and there is great plausibility in supposing with him, that the first chapter of Genesis contains a narrative of the succession of visible appearances.

One may suppose also, that there is a typical and prophetic sense to be discovered hereafter, relative perhaps to the six millenniums, which are to precede a seventh sabbatical one; and that

the words are more accommodated to this sense than to the literal one, in some places, which I think holds in many of the prophecies that have double senses. However, there is no appearance of any motive to a fraud, either in the history of the creation or fall, nor any mark of one. And the same shortness and obscurity which prevents our being able to explain, seems also to preclude objections. If we suppose these histories to have been delivered by traditional explanations that accompanied hieroglyphical delineations, this would perhaps account for some of the difficulties; and help us to conceive how the histories may be exact, and even decypherable hereafter. The appellations of the tree of life, of the tree of the knowledge of good and evil, and of the serpent, seem to favour this supposition. At the utmost, one can make no objections against these histories, but what are consistent with the first and lowest of the suppositions above-mentioned concerning divine inspiration.

Natural history bears a strong testimony to Moses's account of the deluge; and shews that it must have been universal, or nearly so, however difficult it may be to us, either to find sources for so great a body of waters, or methods of removing them. That a comet had some share in this event, seems highly probable, from what Dr. Halley and Mr. Whiston have observed of this matter: I guess also partly from the supposition, that some part of the tail of a comet was then attracted by the earth, and deposited there, partly from the great shortening of human life after the flood, and partly from the fermenting and inebriating quality of vegetable juices, which seems first to have appeared immediately after the flood, that a great change was made at the time of the flood in the constitution of natural bodies, and particularly in that of water. And it seems not improbable to me, that an enlargement of the respective spheres of attraction and repulsion, and of the force of these, in the small particles of water, might greatly contribute to account for some circumstances of the deluge, mentioned by Moses. For, by the increase of the sphere, and force of attraction, the waters suspended in the air or firmament in the form of a mist or vapour before the flood, see Gen. ii. 5, 6, might be collected into large drops, and fall upon the earth. And their fall might give occasion to rarer watery vapours, floating at great distances from the earth in the planetary and intermundane spaces, to approach it, be in like manner condensed into large drops, and fall upon it. This might continue for forty days, the force with which the rare vapours approached the earth decreasing all the latter part of that time, and being at the end of it overpowered by the contrary force of the vapours raised from the earth, now covered with water, by the action of the sun, and of the wind, mentioned Gen. viii. 1. For it is evident, that the wind has great power in raising watery particles, *i. e.* putting them into a state of repulsion; and the wind here considered would be far stronger than that which now

prevails in the Pacific Ocean, since the whole globe was one great ocean during the height of the deluge. The cessation of the rain, and the increase of the sphere, and force of repulsion, above supposed, would in like manner favour the ascent of vapours from this great ocean. And thus the precedent vapours might be driven by subsequent ones into the planetary and intermundane spaces, beyond the earth's attraction. However, since the quantity of the subsequent vapours must perpetually decrease by the decrease of the surface of the ocean, a limit would be set to the ascent of the vapours, as was before to their descent.

According to this hypothesis, that state of our waters, which was superinduced at the deluge, may both be the cause of the rainbow, *i. e.* of drops of a size proper for this purpose, and exempt us from the danger of a second deluge. For a fresh intermixture of like cometical particles could not now superinduce a new state. The rainbow may therefore be a natural sign and evidence, *that the waters shall no more become a flood to destroy the earth.*

As to the breaking up the fountains of the great deep, mentioned Gen. vii. 11, though no satisfactory account has been given of this hitherto, yet surely there is great plausibility in supposing, that the increased attraction of a comet, consequent upon its near approach to the earth, might have some such effect, and at the same time contribute to produce such changes in the earth, as a mere deluge could not.

Civil history affords likewise many evidences, which support the Mosaic account of the deluge. Thus, first, we find from pagan authors, that the tradition of a flood was general, or even universal. Secondly, The paucity of mankind, and the vast tracts of uninhabited land, which are mentioned in the accounts of the first ages, shew that mankind are lately sprung from a small stock, and even suit the time assigned by Moses for the flood. Thirdly, The great number of small kingdoms, and petty states, in the first ages, and the late rise of the great empires of Egypt, Assyria, Babylon, &c. concur to the same purpose. Fourthly, The invention and progress of arts and sciences concur likewise. And this last favours the Mosaic history of the antediluvians. For as he mentions little of their arts, so it appears from the late invention of them after the flood, that those who were preserved from it were possessed of few.

It has been objected to the Mosaic history of the deluge, that the ark could not contain all the animals which are now found upon the earth, with the proper provisions for them during the time of the deluge. But this, upon an accurate computation, has been proved to be otherwise; so that what was thought an objection is even some evidence. For it is extremely improbable, that a person who had feigned the particular of the ark, should have come so near the proper dimensions. It is to be considered here, that the several species of both plants, and brute animals,

which differ from each other by small degrees, seem to be multiplied every day by the varieties of climates, culture, diet, mixture, &c. also, that if we suppose an universal deluge, the ark, with the entrance of the animals, &c. seem necessary also. For as we can trace up the first imperfect rudiments of the art of shipping amongst the Greeks, there could be no shipping before the flood; consequently no animals could be saved. Nay, it is highly improbable, that even men, and domestic animals, could be saved, not to mention wild beasts, serpents, &c. though we should suppose, that the antediluvians had shipping, unless we suppose also, that they had a divine intimation and directions about it, such as Moses relates; which would be to give up the cause of infidelity at once.

It has been objected likewise, That the negro nations differ so much from the Europeans, that they do not seem to have descended from the same ancestors. But this objection has no solid foundation. We cannot presume to say what alterations climate, air, water, soil, customs, &c. can or cannot produce. It is no ways to be imagined, that all the national differences in complexion, features, make of the bones, &c. require so many different originals; on the contrary, we have reason from experience to assert, that various changes of this kind are made by the incidents of life, just as was observed, in the last paragraph, of plants and brute animals. And, with respect to the different complexions of different nations, Dr. Mitchell has shewn with great appearance of truth, *Phil. Trans.* No. 474, that these arise from external influences. It will confirm this, if it be found, that the Jews, by residing in any country for some generations, approach to the complexion of the original natives. At the same time we must observe from the history of distempers, that acquired dispositions may be transmitted to the descendants for some generations; which is perhaps one of the great truths intimated in the account of the fall. And thus the children of negroes may be black, though born and bred up in a country where the original natives are not so.

A third objection is, That it is difficult to account for the original of the Americans, and for the wild beasts and serpents that are found in that quarter of the world, according to the Mosaic history. But to this one may answer, first, That America may be even now contiguous to the north-east part of Asia. Secondly, That it might have been contiguous to other parts of our great continent for some centuries after the deluge, though that contiguity be since broken of. Thirdly, That the first sailors, who ventured out of the straits, or others, might be driven, by stress of weather, and their own ignorance, first within the influence of the trade-winds, and then to some part of America. One can offer nothing certain on either side, in respect to these points. However, it seems to me, that many customs found amongst the negroes and Americans are stronger evidences, that

they are of the same original with the Asiatics and Europeans, than any which have yet appeared to the contrary. And, upon the whole, I conclude certainly, that the Mosaic account of the deluge is much confirmed by both natural and civil history, if we embrace the first and lowest hypothesis concerning divine inspiration; and has very strong presumptions for it, according to the second or third.

If we could suppose the high mountains in South America not to have been immersed in the deluge, we might the more easily account for the wild beasts, poisonous serpents, and curious birds of America. Might not the ark be driven round the globe during the deluge? And might not Noah be aware of this, and observe that it had been immersed fifteen cubits in water? And may not the Mosaic account be partly a narrative of what Noah saw, partly the conclusions which he must naturally draw from thence? Thus the tops of some of the highest mountains might escape, consistently with the Mosaic account. The future inquiries of natural historians may perhaps determine this point.

The next great event recorded in Genesis is the confusion of languages. Now the Mosaic account of this appears highly probable, if we first allow that of the deluge. For it seems impossible to explain how the known languages should arise from one stock. Let any one try only in Hebrew, Greek, Latin, and English. The changes which have happened in languages since history has been certain, do not at all correspond to a supposition of this kind. There is too much of method and art in the Greek and Latin tongues for them to have been the inventions of a rude and barbarous people; and they differ too much from Hebrew, Arabic, &c. to have flowed from them without design. As to the Chinese, it is difficult to make any probable conjectures about it, partly from its great heterogeneity in respect of other languages, partly because learned men have not yet examined it accurately. However, the most probable conjecture seems to be, that it is the language of Noah's postdiluvian posterity; the least probable one, that it could have flowed naturally from any known language, or from the same stock with any; which it must have done, if we admit the deluge, and yet reject the confusion of languages.

The dispersion of the three sons of Noah into different countries, related in the tenth chapter of Genesis, comes next under consideration, being a consequence, not the cause, of the diversity of languages. Now here antiquarians, and learned men, seem to be fully agreed, that the Mosaic account is confirmed, as much as can be expected in our present ignorance of the state of ancient nations. And it is to be observed of all the articles treated of under this proposition, that we, who live in the north-west corner of Europe, lie under great disadvantages in such researches. However, since those who have studied the oriental languages and histories, or have travelled into the eastern parts, have made

many discoveries of late years, which have surprisingly confirmed the scripture accounts, one may hope and presume, that if either our learned men be hereafter suffered to have free access to those parts, or the natives themselves become learned, both which are surely probable in the highest degree, numberless unexpected evidences for the truth of the scripture history will be brought to light.

Let us next come to the state of religion in the ancient post-diluvian world, according to Moses, and the succeeding sacred historians. The postdiluvian patriarchs then appear to have worshipped the one Supreme Being by sacrifices, but in a simple manner, and to have had frequent divine communications. By degrees their posterity fell off to idolatry, worshipped the sun, moon, and stars, deified dead men, and polluted themselves with the most impure and abominable institutions. The Israelites alone were kept to the worship of the true God, and even they were often infected by their idolatrous neighbours. Now all this is perfectly agreeable to what we find in pagan history. The idolatries of the pagans are acknowledged on all hands. It appears also from pagan history, that they grew up by degrees, as the Scriptures intimate. All the pagan religions appear to have had the worship of one God superior to the rest, as their common foundation. They all endeavoured to render him propitious by sacrifice; which surely cannot be a human invention, nor a custom, which, if invented in one nation, would be readily propagated to another. They all joined mediatorial and inferior, also local and tutelar deities to the one God. And they all taught the frequency of divine communications. Hence the pagan religions appear to be merely the degenerated offspring of patriarchal revelations, and to infer them as their cause. Hence the pretences of kings, lawgivers, priests, and great men, to inspiration, with the credulity of the multitude. That there had been divine communications, was beyond dispute; and therefore all that reluctance to admit them, which appears in the present age, was overruled. At first there were no impostors. When therefore they did arise, it would not be easy for the multitude to distinguish between those who had really divine communications, and those who only pretended to them; till at last all real inspiration having ceased amongst the Gentile world, their several religions kept possession merely by the force of education, fraud in the priests, and fear in the people; and even these supports began to fail at last, about the time of Christ's coming. And thus many things, which have been thought to weaken the evidences for the scripture accounts, are found to strengthen them, by flowing naturally from that state of religion in ancient times, and from that only, which the Scripture delivers.

A farther confirmation of the same scripture accounts of the flood, dispersion of mankind, and patriarchal revelations, may be had from the following very remarkable particular: it appears

from history, that the different nations of the world have had, *cæteris paribus*, more or less knowledge, civil and religious, in proportion as they were nearer to, or had more intimate communication with, Egypt, Palestine, Chaldæa, and the other countries, that were inhabited by the most eminent persons amongst the first descendants of Noah, and by those who are said in Scripture to have had particular revelations made to them by God; and that the first inhabitants of the extreme parts of the world, reckoning Palestine as the centre, were in general mere savages. Now all this is utterly inexplicable upon the footing of infidelity, of the exclusion of all divine communications. Why should not human nature be as sagacious, and make as many discoveries, civil and religious, at the Cape of Good Hope, or in America, as in Egypt, Palestine, Mesopotamia, Greece, or Rome? Nay, why should Palestine so far exceed them all, as it did confessedly? Allow the scripture accounts, and all will be clear and easy. Mankind, after the flood, were first dispersed from the plains of Mesopotamia. Some of the chief heads of families setted there, in Palestine, and in Egypt. Palestine had afterwards extraordinary divine illuminations bestowed upon its inhabitants, the Israelites and Jews. Hence its inhabitants had the purest notions of God, and the wisest civil establishment. Next after them come the Egyptians and Chaldæans, who, not being removed from their first habitations, and living in fertile countries watered by the Nile, Tigris, and Euphrates, may be supposed to have preserved more both of the antediluvian and postdiluvian revelations, also to have had more leisure for invention, and a more free communication with the Israelites and Jews, than any other nations: whereas those small parties, which were driven farther and farther from each other into the extremes of heat and cold, entirely occupied in providing necessaries for themselves, and also cut off by rivers, mountains, or distance, from all communication with Palestine, Egypt, and Chaldæa, would lose much of their original stock, and have neither inclination nor ability to invent more.

Let us now consider the history of particular facts, and inquire what attestations we can produce from pagan history for the scripture accounts of Abraham, and his posterity, the Israelites and Jews. We cannot expect much here, partly because these things are of a private nature, if compared to the universal deluge, partly because the pagan history is either deficient, or grossly corrupted with fable and fiction, till we come to the times of the declension of the kingdoms of Israel and Judah. However, some faint traces there are in ancient times, and many concurring circumstances in succeeding ones; and, as soon as the pagan records come to be clear and certain, we have numerous and strong confirmations of the sacred history. Thus the history of Abraham seems to have transpired in some measure. It is also probable, that the ancient Brachmans were of his posterity

by Keturah; that they derived their name from him, and worshipped the true God only. Moses is mentioned by many heathen writers, and the account which they give of his conducting the Israelites from Egypt to Canaan are such as might be expected. The authors lived so long after Moses, and had so little opportunity or inclination to know the exact truth, or to be particular, that their accounts cannot invalidate the scripture history, though they do a little confirm it. The expulsion of the Canaanites by Joshua seems to have laid the foundation of the kingdom of the *shepherds* in the Lower Egypt mentioned by Manetho, and of the expulsion of the natives into the Upper Egypt; who, after some centuries, drove the *shepherds* back again into Canaan about the time of Saul. The Canaanites mentioned by St. Austin and others, upon the coast of Africa, may be of the same original. See Newton's Chronol. page 198. We may conclude from the book of Judges, that there were many petty sovereignties in the neighbourhood of Canaan; and it appears from pagan history, as Sir Isaac Newton has rectified it, that the first great empire, that of Egypt, was not yet risen. When David subdued the Philistines or Phœnicians, Cadmus and others seem to have fled into Greece, and to have carried letters with them, which the Philistines had probably learnt, about a generation before, from the copy of the law found in the ark taken from the Israelites. After Solomon's temple was built, the temple of Vulcan in Egypt, and others in other places, began to be built in imitation of it; just as the oracles of the heathens were imitations of God's communications to the Israelites, and particularly of that by Urim and Thummim. Shishak, who came out of Egypt in the fifth year of Rehoboam, is the Sesostris of Herodotus; this point, being settled, becomes a capital pin, upon which all pagan chronology depends. Hence Herodotus's list of the Egyptian kings is made probable and consistent. As we advance farther to the Assyrian monarchy, the scripture accounts agree with the profane ones rectified; and when we come still farther to the æra of Nabonassar, and to the kings of Babylon and Persia, which are posterior to this æra, and recorded in Ptolemy's canon, we find the agreement of sacred and profane history much more exact, there being certain criterions in the profane history for fixing the facts related in it. And it is remarkable that not only the direct relations of the historical books, but the indirect, incidental mention of things in the prophecies, tallies with true chronology; which surely is such an evidence for their genuineness and truth, as cannot be called in question. And, upon the whole, it may be observed, that the sacred history is distinct, methodical, and consistent throughout; the profane utterly deficient in the first ages; obscure, and full of fictions, in the succeeding ones; and that it is but just clear and precise in the principal facts about the time that the sacred history ends. So that this corrects and regulates that, and ren-

ders it intelligible in many instances, which must otherwise be given up as utterly inexplicable. How then can we suppose the sacred history not to be genuine and true, or a wicked imposture to rise up, and continue not only undiscovered, but even to increase to a most audacious height, in a nation which of all others kept the most exact accounts of time? I will add one remark more: This same nation, who may not have lost so much as one year from the creation of the world to the Babylonish captivity, as soon as they were deprived of the assistance of prophets, became most inaccurate in their methods of keeping time, there being nothing more erroneous than the accounts of Josephus, and the modern Jews, from the time of Cyrus, to that of Alexander the Great; notwithstanding that all the requisite assistances might easily have been borrowed from the neighbouring nations, who kept regular annals. Hence it appears that the now exactness of the sacred history was owing to the divine assistance.

It is an evidence in favour of the Scriptures, allied to those which I am here considering, that the manners of the persons mentioned in the Scriptures have that simplicity and plainness, which is also ascribed to the first ages of the world by pagan writers; and both of them concur, by this, to intimate the novelty of the then present race, *i. e.* the deluge.

Besides these attestations from profane history, we may consider the Jews themselves as bearing testimony to this day, in all countries of the world, to the truth of their ancient history, *i. e.* to that of the Old and New Testaments. Allow this, and it will be easy to see how they should still persist in their attachment to that religion, those laws, and those prophecies, which so manifestly condemn them, both in past times, and in the present. Suppose any considerable alteration made in their ancient history, *i. e.* any such as may answer the purposes of infidelity, and their present state will be inexplicable.

The books of the New Testament are verified by history, in a manner still more illustrious; these books being written, and the facts mentioned therein transacted during the times of Augustus, Tiberius, and the succeeding Cæsars. Here we may observe,

First, That the incidental mention of the Roman emperors, governors of Judæa, and the neighbouring provinces, the Jewish high-priests, sects of the Jews, and their customs, of places, and of transactions, is found to be perfectly agreeable to the histories of those times. And as the whole number of these particulars is very great, they may be reckoned a full proof of the genuineness of the books of the New Testament; it being impossible for a person who had forged them, *i. e.* who was not an eye and ear witness, and otherwise concerned with the transactions as the books require, but who had invented many histories and circumstances, &c. not to have been deficient, superfluous, and erroneous. No man's memory or knowledge is sufficient for such

an adaptation of feigned circumstances, and especially where the mention is incidental. Let any one consider how often the best poets fail in this, who yet endeavour not to vary from the manners and customs of the age of which they write; at the same time that poetry neither requires nor admits so great a minuteness in the particular circumstances of time, place, and persons, as the writers of the New Testament have descended to naturally and incidentally.

Secondly, That Christ preached in Judæa and Galilee, made many disciples, and was crucified under Pontius Pilate, at the instigation of the chief men among the Jews; also that his disciples preached after his death, not only in Judæa, but all over the Roman empire; that they converted multitudes, were persecuted, and at last suffered death, for their firm adherence to their master; and that both Christ and his disciples pretended to work many miracles; are facts attested by civil history in the amplest manner, and which cannot be called in question. Now these facts are so connected with the other facts mentioned in the New Testament, that they must stand or fall together. There is no probable account to be given of these facts, but by allowing the rest. For the proof of this, I appeal to every reader who will make the trial. It may also be concluded from the remarkable unwillingness of the present unbelievers to allow even the plainest facts in express terms. For it shews them to be apprehensive, that the connexion between the several principal facts mentioned in the New Testament is inseparable, and that the attestation given to some by civil history may easily be extended to all.

It has been objected, That more mention ought to have been made of the common facts by the profane writers of those times, also some acknowledgment of the miraculous ones, had they been true. To this we may answer, First, That Judæa was but a small and distant province of the Roman empire, and the Jews themselves, with whom the Christians were for a long time confounded, much despised by the Romans. Secondly, That historians, politicians, generals, &c. have their imaginations so much preoccupied by affairs of state, that matters purely religious are little regarded by them. *Gallio cared for none of these things.* Thirdly, That a person who attended in any great degree to the Christian affairs, if a good man, could scarce avoid becoming a Christian; after which his testimony ceases to be Pagan, and becomes Christian, of which I shall speak under the next head. Fourthly, That both those who were favourers of the Christians, and those averse to them in a moderate degree, one of which must be the case with great numbers, would have motives to be silent; the half-Christians would be silent for fear of being persecuted; and the others would affect to take no notice of what they disliked, but could not disprove; which is a fact that occurs to daily observation. Lastly, When these things are laid together, the

attestations of the profane writers to the common facts appear to be such as one might expect, and their silence as to the miraculous ones is accounted for.

Thirdly, All the Christian writers, from the time of the apostles and downwards, bear testimony to the genuineness of the books of the New Testament, and the truth of the facts, in a great variety of ways, direct and indirect, and in such manner as might be expected. Their quotations from them are numberless, and agree sufficiently with the present copies. They go every where upon the supposition of the facts, as the foundation of all their discourses, writings, hopes, fears, &c. They discover every where the highest regard, and even veneration, both for the books and the authors. In short, one cannot see how this testimony in favour of the books of the New Testament can be invalidated, unless by supposing all the ecclesiastical writing of the first centuries to be forged also; or all the writers to have concurred to write as if they believed the genuineness and truth of these books, though they did not; or to have had no ability or inclination to distinguish genuineness and truth from forgery and falsehood; or by some other such supposition, as will scarce bear to be named.

Here three questions may be asked, that bear some relation to this subject; and the answers to which will, I think, illustrate and confirm what has been advanced in the last paragraph.

Thus, first, It may be asked, why we have not more accounts of the life of Christ transmitted to us. To this I answer, that it is probable from St. Luke's preface, that there were many short and imperfect accounts handed about very early; the authors of which, though they had not taken care to inform themselves accurately, did not, however, endeavour to impose on others designedly; and that all these grew into disuse, of course, after the four gospels, or perhaps the three first, were published, or, at least, after the canon of the New Testament was formed; also that after this the Christians were so perfectly satisfied, and had the four gospels in such esteem, that no one presumed to add any other accounts, and especially as all the apostles were then dead.

The second question is, How come we to have so little account, in the primitive writers, of the lives, labours, and sufferings of the apostles? I answer, that the apostles seem to have resided in Judæa, till Nero's army invaded it, and afterwards to have travelled into distant parts; and that neither their converts in Judæa, nor those in the distant barbarous countries, into which they travelled, could have any probable motive for writing their lives: also, that, as to other Christians, they had neither opportunities nor motives. The Christians looked up to Christ, as their master, not to the apostles. Their great business was to promote Christianity, not to gratify their own or others fruitless curiosity. They were not learned men, who had spent

their lives in the study of annalists and biographers. They did not suspect, that an account of the lives of the apostles would ever be wanted, or that any one could call their integrity, inspiration, miracles, &c. in question. St. Luke seems to have designed by his Acts, chiefly to shew how the gospel first got firm footing amongst Jews, proselytes of the gate, and idolatrous Gentiles; in order to encourage the new converts to copy the examples of the apostles, and first preachers, and to publish the gospel in all nations. Lastly, The primitive Christians had early disputes with Jews, heathens, heretics, and even with one another; which took up much of their attention and concern.

Thirdly, It may be asked, Who were the persons that forged the spurious acts and revelations of several of the apostles, &c.? I answer, that, amongst the number of those who joined themselves to the Christians, there must be many whose hearts were not truly purified, and who, upon apostatizing, would become more self-interested, vain-glorious, and impure, than before. These were antichrists, as St. John calls them, who left the church because they were not of it. Some of these forged books to support themselves, and establish their own tenets. Others might write partly like enthusiasts, partly like impostors. And, lastly, There were some both weak and wicked men, though not so abandoned as the ancient heretics, who in the latter end of the second century, and afterwards, endeavoured to make converts by forgeries, and such other wicked acts. However, all those who are usually called fathers, in the first ages, stand remarkably clear of such charges.

Fourthly, The propagation of Christianity, with the manner in which it was opposed by both Jews and Gentiles, bears witness to the truth and genuineness of the books of the New Testament. But I forbear entering upon this argument, as it will come more properly in another place. Let me only observe here, that there are many passages in the Talmudical writings, which afford both light and confirmation to the New Testament, notwithstanding that one principal design of the authors was to discredit it.

PROP. XXV.—*The Agreement of the Books of the Old and New Testaments with themselves and with each other is an Argument both of their Genuineness and Truth.*

THE truth of this proposition will be evident, if a sufficient number of these mutual agreements can be made out. It is never found that any single person, who deviates much from the truth, can be so perfectly upon his guard as to be always consistent with himself. Much less therefore can this happen in the case of a number, living also in different ages. Nothing can make them consistent, but their copying faithfully after real facts. The instances will make this clearer.

The laws of the Israelites are contained in the Pentateuch,

and referred to in a great variety of ways, direct and indirect, in the historical books, in the Psalms, and in the Prophecies. The historical facts also in the preceding books are often referred to in those that succeed, and in the Psalms and Prophecies. In like manner, the gospels have the greatest harmony with each other, and the Epistles of St. Paul with the Acts of the Apostles. And indeed one may say, that there is scarce any book of either Old or New Testament, which may not be shewn to refer to many of the rest in some way or other. For it is to be observed, that the Bible has been studied and commented upon far more than any other book whatsoever; and that it has been the business of believers in all ages to find out the mutual relations of its parts, and of unbelievers to search for inconsistencies; also that the first meet every day with more and more evidences in favour of the Scriptures from the mutual agreements and coincidences here considered; and that unbelievers have never been able to allege any inconsistencies that could in the least invalidate the truth of the principal facts; I think, not even affect the divine inspiration of the historical books, according to the second or third hypothesis above-mentioned.

It will probably illustrate this proposition, to bring a parallel instance from the Roman writers. Suppose then that no more remained of these writers than Livy, Tully, and Horace. Would they not, by their references to the same facts and customs, by the sameness of style in the same writer, and differences in the different ones, and numberless other such like circumstances of critical consideration, prove themselves and one another to be genuine, and the principal facts related, or alluded to, to be true?

It is also to be observed, that this mutual harmony and self-consistency, in its ultimate ratio, is the whole of the evidence which we have for facts done in ancient times, or distant places. Thus, if a person was so sceptical as to call in question the whole Roman history, even the most notorious facts, as their conquests, first of Italy, and then of the neighbouring countries, the death of Cæsar, and the fall of the western empire by the invasions of the Goths and Vandals, with all the evidences of these from books, inscriptions, coins, customs, &c. as being all forged in order to deceive; one could only shew him, that it is inconsistent with what he sees of human nature, to suppose that there should be such a combination to deceive; or that the agreement of these evidences with each other is far too great to be the effect of any such fraudulent design, of chance, &c. And all these arguments are, in effect, only bringing a number of concurring evidences, whose sum total soon approaches to the ultimate limit, *i. e.* to unity, or absolute certainty, nearer than by any distinguishable difference. It does not therefore import, in respect of real conviction, after a certain number are brought, whether we bring any more or no; they can only add this

imperceptible defect, *i. e.* practically nothing. Thus I suppose, that the remaining writings of Livy, Tully, and Horace, alone would satisfy any impartial man so much of the general extensiveness of the Roman conquests, &c. that nothing perceptible could be added to his conviction; no more than any common event can, or ever does in fact, appear more credible from the testimony of a thousand than of ten or twenty witnesses of approved integrity. And whoever will apply this reasoning to the present case, must perceive, as it appears to me, that the numberless minute, direct, and indirect agreements and coincidences, that present themselves to all diligent readers of the Scriptures, prove their truth and genuineness beyond all contradiction, at least according to the first and lowest hypothesis concerning divine inspiration.

As to those few and small apparent inconsistencies, which are supposed to confine the inspiration of the Scriptures to this lowest sense; one may observe, that they decrease every day as learned men inquire farther; and that, were the Scriptures perfectly exact in every particular, there must be some apparent difficulties, arising merely from our ignorance of ancient languages, customs, distant places, &c. and consequently that if these be not more than our ignorance makes it reasonable to expect, they are no objection at all. And of apparent inconsistencies one may remark in particular, that they exclude the supposition of forgery. No single forger, or combination of forgers, would have suffered the apparent inconsistencies which occur in a few places, such as the different genealogies of Christ in St. Matthew and St. Luke, and some little variations in the narration of the same fact in different gospels. These are too obvious at first sight not to have been prevented, had there been any fraud.

I will here add an hypothesis, by which, as it appears to me, one may reconcile the genealogies of St. Matthew and St. Luke. I suppose then, that St. Matthew relates the real progenitors of Joseph; St. Luke the series of those who were heirs to David by birthright; and that both transcribed from genealogical tables, well known to the Jews of those times. St. Matthew after David takes Solomon, from whom Joseph lineally descended. St. Luke takes Nathan, upon whom, though younger than some others, and even than Solomon, we must suppose the birthright to be conferred, as in the instances of Jacob and Joseph. St. Matthew proceeds by real descent to Salathiel, at the time of the captivity; St. Luke proceeds by the heirs according to birthright, and comes to Salathiel likewise. We must therefore suppose, that Salathiel, Solomon's heir, was now David's also, by the extinction of all the branches of Nathan's family. St. Matthew then takes Zorobabel as Joseph's real progenitor, St. Luke takes him as heir or eldest son to Salathiel. Again, St. Matthew takes Abiud the real progenitor, St. Luke Rhesa the eldest son;

and thus St. Matthew proceeds by lineal descent to Joseph; St. Luke by heirs to the same Joseph; for we are to suppose, that Heli dying without heirs male, Joseph became his heir by birthright, *i. e.* heir to Zorobabel, *i. e.* to David. If we farther suppose, that the Virgin Mary was daughter to Heli, for which there appears to be some evidence, the solution will be more complete, and more agreeable to the Jewish customs. It confirms this solution, that St. Matthew uses the word ἐγέννησε, which restrains his genealogy to lineal descent; whereas St. Luke uses the article τοῦ, which is very general. It confirms it also, that St. Luke's descents, reckoning from David to Salathiel, are but about twenty-two years apiece; which is much too short for descents from father to son, but agrees very well to descents by birthright. As to St. Matthew's descents, they are far too long, after the captivity, for descents from father to son; but then it is easy to suppose, that some were left out on account of dying before their fathers, or some other reason. Three of the kings of Judah are left out after Joram, perhaps on account of their being of the immediate posterity of the idolatrous Ahab's daughter Athaliah. Others are left out after the captivity, perhaps for some similar reason.

PROP. XXVI.—*The Unity of Design, which appears in the Dispensations recorded in the Scriptures, is an Argument not only of their Truth and Genuineness, but also of their Divine Authority.*

FOR this unity is not only so great as to exclude forgery and fiction, in the same way as the mutual agreements mentioned in the last proposition, but also greater than the best and ablest men could have preserved, in the circumstances of these writers, without the divine assistance. In order to see this, let us inquire what this design is, and how it is pursued by the series of events, and divine interpositions, recorded in the Scriptures.

The design is that of bringing all mankind to an exalted, pure, and spiritual happiness, by teaching, enforcing, and begetting in them love and obedience to God. This appears from many passages in the Old Testament, and from almost every part of the New. Now we are not here to inquire in what manner an Almighty Being could soonest and most effectually accomplish this. But the question is, whether, laying down the state of things as it has been, is, and probably will be, for our foundation, there be not a remarkable fitness in the dispensations ascribed to God in the Scriptures, to produce this glorious effect; and whether the persons who administered these dispensations did not here concur with a surprising uniformity, though none of them saw God's ultimate design completely, and some but very imperfectly; just as brutes, by their instincts, and children, by the workings of their natural faculties, contribute to their own

preservation, improvement, and happiness, without at all foreseeing that they do this. If we alter any of the circumstances of the microcosm, or macrocosm, of the frame of our own natures, or of the external world that surrounds us, we shall have question rise up after question, in an endless series, and shall never be satisfied, unless God should be pleased to produce happiness instantaneously, *i. e.* without any means, or secondary instrumental causes, at all; and, even then, we should only be where we were at our first setting out, if things be considered in the true, ultimate light. We are, therefore, to lay down the real state of things, as our foundation; *i. e.* we are to suppose man to be in a state of good mixed with evil, born with appetites, and exposed to temptations, to which, if he yields, suffering must follow; which suffering, however, tends to eradicate the disposition from whence it flowed, and to implant a better: we are to suppose him to be endued with voluntary powers, which enable him to model his affections and actions according to a rule; and that the love of God, his ultimate happiness, can never be genuine, but by his first learning to fear God, by his being mortified to pleasure, honour, and profit, and the most refined selfish desires, and by his loving his neighbour as himself; *i. e.* we must suppose all that which practical writers mean by a state of trial, temptation, moral exercise, and improvement, and of practical free-will. Let us see, therefore, how the several dispensations mentioned in the Scriptures, their being recorded there, and the subordinate parts which the prophets and apostles acted, conspired to bring about this ultimate end of man, both in each individual, and in the whole aggregate, considered as one great individual, as making up the mystical body of Christ, according to the language of St. Paul; and inquire whether, if all other reasons were set aside, the mere harmony and concurrence of so many parts, and so many persons removed from each other by long intervals of time, in this one great design, will not compel us to acknowledge the genuineness, truth, and divine authority, of the Scriptures.

The first thing which presents itself to us in the Scriptures, is the history of the creation and fall. These are not to be accounted for, as was said above, being the foundation upon which we go. However, the recording them by Moses, as tradition began to grow weak and uncertain, has been of great use to all those who have had them communicated by this means perfectly or imperfectly, *i. e.* to a great part of the world. This history impresses an awful and amiable sense of the Divine Being, our creator and judge; shews the heinousness of sin; and mortifies us to this world, by declaring that our passage through it must be attended with labour and sorrow. We find ourselves in this state: revealed religion did not bring us into it: nor is this state an objection to revealed religion, more than to natural: however, revealed religion goes a step higher than natural, and shews the

immediate secondary cause, *viz.* the sin and wilful disobedience of our first parents. And when the account of paradise, of man's expulsion thence, and of the curse past upon him in the beginning of Genesis, are compared with the removal of this curse, of sorrow, crying, pain, and death, with the renovation of all things, and with man's restoration to the tree of life and paradise, and his admission into the new Jerusalem in the last chapters of the Revelation, hope and fear quicken each other; and both conspire to purify the mind, and to advance the great design considered under this proposition.

How far the deluge was necessary, *cæteris manentibus*, for the purification of those who were destroyed by it, *i. e.* for accomplishing this great end in them, we cannot presume to say. It is sufficient that there is no contrary presumption, that no methods consistent with the state of things in the ancient world were neglected, as far as we know, and that we are not in the least able to propose a better scheme. We leave these rebellious, unhappy people, now translated into another state, to the same kind Providence which attended them in this, and all whose punishments on this side the grave are for melioration. However, the evident footsteps of this in the world, and the clear tradition of it, which would continue for several ages, also the history of it delivered by Moses, have an unquestionable good tendency. Sinners, who reflect at all, cannot but be alarmed at so dreadful an instance of divine severity. Farther, if this history should open to us a new relation, *viz.* that which we bear to the comets, this, compared with other parts of the Scriptures, may give us hereafter such intimations concerning the kind, degree, and duration of future punishment, as will make the most obdurate tremble, and work in them that fear which is the beginning of wisdom, and of the perfect love which casteth out fear. At the same time we may observe, that the covenant which God made, not only with Noah and his posterity, but with all living creatures, after the flood, has a direct and immediate tendency to beget love.

The confusion of languages, the consequent dispersion of mankind, and the shortening of the lives of the postdiluvians, all concurred to check the exorbitant growth and infection of wickedness. And we may judge how necessary these checks were, *cæteris manentibus*, from the great idolatry and corruption which appeared in the world within less than a thousand years after the flood. The patriarchal revelations mentioned and intimated by Moses had the same good effects, and were the foundations of those pagan religions, and, in great measure, of that moral sense, which, corrupt and imperfect as they were, could not but be far preferable to an entire want of these. If it be objected, that, according to this, greater checks, and more divine communications, were wanted; I answer, that a greater dispersion, or shortening of human life, might have prevented

the destined increase of mankind, or the growth of knowledge, civil and religious, &c. and that more or more evident divine interpositions might have restrained the voluntary powers too much, or have precluded that faith which is necessary to our ultimate perfection. These are conjectures indeed; but they are upon the level with the objection, which is conjectural also.

The next remarkable particular that occurs, is the calling of Abraham, the father of the faithful. Now in this part of the scripture history, as it is explained in the New Testament, we have the strongest evidences of God's great design to purify and perfect mankind. He is called to forsake his relations, friends, and country, lest he should be corrupted by idolatry; he receives the promise of the land of Canaan, without seeing any probable means of obtaining it, besides this promise, in order to wean him from the dependence on external means; he waits for a son till all natural expectations ceased, for the same purpose; by obtaining him he learns to trust in God notwithstanding apparent impossibilities; and the command to sacrifice *his son, his only son Isaac, whom he loved*, affords him a noble opportunity of exercising this trust, and of shewing that his principle of obedience to God was already superior to the purest of earthly affections. Lastly, when God promises him, as a reward for all his faith and obedience, as the highest blessing, that *in him and his seed all the nations of the earth should be blessed*, we must conceive this to be a declaration, first, that God himself is infinitely benevolent; and, secondly, that the happiness of Abraham, of his seed, and of all mankind, who were to be blessed in his seed, must arise from their imitation of God in his benevolence. This whole universe is therefore a system of benevolence, or, as St. Paul expresses it, a body, which, being *fitly framed and compacted together, increaseth itself in love*.

As to the objection which is sometimes made to the sacrifice of Isaac, we may observe, that Abraham had himself received so many divine communications, and had been acquainted with so many made to his ancestors, that he had no doubt about the command's coming from God, did not even ask himself the question. It is probable, that in that early age there had as yet been few or no false pretences, or illusions. Abraham could as little doubt of God's right to Isaac's life, or of his care of him in another state. These things were parts of the patriarchal religion. And yet great faith was required in Abraham, before he could overcome his natural affection and tenderness for Isaac out of a principle of obedience to God, and trust God for the accomplishment of his promise, though he commanded him to destroy the only apparent means of accomplishing it. Unless Abraham had been highly advanced in faith and obedience, he could not have stood so severe a trial; but this trial would greatly confirm these. And thus this history is so far from being liable to objection, that it is peculiarly conformable to those methods, which mere reason

and experience dictate as the proper ones, for advancing and perfecting true religion in the soul. When the typical nature of it is also considered, one cannot surely doubt of its divine authority. And, in the previous steps, through which Abraham passed in order to obtain this blessing, we have an adumbration and example of that faith, patience, and gradual progress in the spiritual life, which are necessary to all those who hope to be *blessed with faithful Abraham*.

Let us next pass on to Moses, and the Israelites under his conduct. Here we enter upon the consideration of that people, who are the type of mankind in general, and of each individual in particular; who were the keepers of the oracles of God, and who, under God, agreeably to his promise to Abraham, have been, and will hereafter be, a blessing to all nations, and the means of restoring man to his paradisiacal state. And first they are oppressed with a cruel slavery in Egypt, lest, being delighted with its fertility, and the present pleasures of sense which it afforded, they should forget their true earthly country, *the land of promise*. They then see the most amazing judgments inflicted upon their enemies, the Egyptians, by God, whilst they themselves were protected and delivered, that so they might learn confidence in his power and favour, and be thus prepared for their institution in religion, and their trial and purification in the wilderness. And here the awful delivery of the law, their being fed from day to day by miracle, their being kept from all commerce with other nations, and from all cares of this world in building, planting, &c. till their old habits, and Egyptian customs and idolatries, were quite effaced, and the practice of the new law established, their having the history of the world, and particularly of their ancestors, laid before them in one view, their tabernacle, their numerous rites and ceremonies, additional to those of the patriarchal religion, and opposite to the growing idolatries of their neighbours the Egyptians and Canaanites, and which, besides their uses as types, were memorials of their relation to God, and of his constant presence and protection, and, lastly, the total extinction of that murmuring generation, who longed for the flesh-pots of Egypt, cannot but appear to be intended for the purification of this chosen people, as being remarkably analogous to the methods of purification, which every good man experiences in himself, and sees in others, *i. e.* cannot but appear highly conducive to the great design considered under this proposition. At last, the education and instruction of this people being finished, they are admitted to inherit the earthly promise made to their forefathers, and take possession of the land of Canaan under Joshua. And thus we come to a remarkable period in God's dispensations to them.

Now therefore they are, in some measure, left to themselves, for the sake of moral improvement, the divine interpositions being far less frequent and solemn, than at the first erection of

the theocracy under Moses's administration. However, there were many supernatural interpositions, appointments, favours, corrections, &c. from Joshua to Malachi, on account of their yet infant state in respect of internal purity, whose tendency to improve both the body politic of the nation, and each individual, is sufficiently evident. After Malachi they were entirely left to themselves; their canon being completed, they were then only to hear and digest what Moses and the prophets had delivered unto them; and by this means to prepare themselves for the last and completest dispensation.

But, before we enter upon this, let us briefly consider the state of the Gentile world, in the interval between Abraham and Christ, and what intimations the Old Testament gives us of their being also under the care of Providence, and in a state of moral discipline. They had then, according to this, first, The traditions of patriarchal revelations. Secondly, All the nations in the neighbourhood of Canaan had frequent opportunities and motives to inform themselves of the true religion. Thirdly, All those who conquered them at any time could not but learn something both from their subjection, and their deliverances afterwards. Fourthly, The captivities by Salmaneser and Nebuchadnezzar carried the knowledge of the true God to many distant nations. Lastly, The distractions of the Jewish state during the cotemporary empires of Syria and Egypt, the rise of the Samaritan religion, and the translation of the Old Testament into Greek, conduced eminently to the same purpose. And as it is necessary in the present state of things, for the exercise of various affections, and our moral improvement, that there should be degrees and subordinations in common things, so it seems equally necessary that it should be so in religious matters: and thus the Gentiles may have had, in the interval between Abraham and Christ, all that suited their other circumstances, all that they could have improved by internal voluntary purity, other things remaining the same, which is always supposed. And it is remarkable in the view of this proposition, that we learn so much from the Scriptures concerning the moral discipline which God afforded to the Gentiles.

When we come to the New Testament, the great design of all God's dispensations appears in a still more conspicuous manner. Here we see how Christ began to erect his spiritual kingdom, and the apostles extended it; we have the sublimest doctrines, and purest precepts, for effecting it in ourselves and others, and the strongest assurances that it will be effected at last, that this leaven will continue to operate till the whole lump be leavened. But, above all, it is remarkable, that the principal means for effecting this is by submission and sufferance, not resistance and external violence. The preachers are to undergo shame, persecution, and death, as the Lord of life and glory did before them. This is that *foolishness of God*, which is *wiser than men*, and that *weakness of God*, which is *stronger than men*. These

means seem foolish and weak to the false wisdom of this world. But if they be compared with the frame of our natures, and with the real constitution of things, they will appear to be perfectly suited to produce in all mankind that best of ends, the annihilation of self, and worldly desires, and the pure and perfect love of God, and of all his creatures, in and through him.

Setting aside therefore the greatness of this end, and its suitableness to the divine goodness, setting aside also the miracles which have concurred in it, I say that the coincidence of the histories, precepts, promises, threatenings, and prophecies of the Scriptures in this one point, is an argument not only of their genuineness and truth, but of their divine authority. Had the writers been guided by their own spirits, and not by the supernatural influences of the Spirit of truth, they could neither have opened to us the various dispensations of God tending to this one point, nor have pursued it themselves, with such entire steadiness and uniformity, through so many different ages of the world.

The gradual opening of this design is an argument to the same purpose. Man's wisdom, if it could have formed such a design, would have rushed forward upon it prematurely. At the same time we may observe, that this design is implied in the Scriptures from the first, though not expressed so as to be then understood; which is another argument of their divine original.

COR. From the reasoning used under this proposition we may be led to believe, that all the great events which happen in the world, have the same use as the dispensations recorded in the Scriptures, *viz.* that of being a course of moral discipline for nations and individuals, and of preparing the world for future dispensations. Thus the irruption of the barbarous nations into the Roman empire, the Mahometan imposture, the corruptions of the Christian religion, the ignorance and darkness which reigned for some centuries during the grossest of these corruptions, the reformation, restoration of letters, and the invention of printing, three great cotemporary events which succeeded the dark times, the rise of the enthusiastical sects since the reformation, the vast increase and diffusion of learning in the present times, the growing extensiveness of commerce between various nations, the great prevalence of infidelity amongst both Jews and Christians, the dispersion of Jews and Jesuits into all known parts of the world, &c. &c. are all events, which however mischievous some of them may seem to human wisdom, are, *cæteris manentibus*, the most proper and effectual way of hastening the kingdom of Christ, and the renovation of all things.

PROP. XXVII.—*Divine Communications, Miracles, and Prophecies, are agreeable to Natural Religion, and even seem necessary in the Infancy of the World.*

SINCE God is a being of infinite justice, mercy, and bounty, according to natural religion, it is reasonable to expect, that if

the deficiencies of natural reason, or the inattention of mankind to the footsteps of his providence, were such at any time, as that all the world were in danger of being lost in ignorance, irreligion, and idolatry, God should interpose by extraordinary instruction, by alarming instances of judgment and mercy, and by prophetic declarations of things to come, in order to teach men his power, his justice, and his goodness, by sensible proofs and manifestations. We must not say here, that God could not suffer this; but inquire from history, whether he has or no. Now I suppose it will easily be acknowledged, that this was the case with the Gentile world in ancient times, and that the Judaical and Christian institutions have greatly checked irreligion and idolatry, and advanced true natural religion; which is a remarkable coincidence in favour of these institutions, though all other evidences for them were set aside. Neither must we say here, that since God permits gross ignorance in some nations, the Hottentots for instance, even to this day, he might have permitted it in all mankind. Allow that we know so little of his unsearchable judgments, as not to be able to make any certain conclusion: yet surely it is much more agreeable to the forenamed attributes, and to the analogies of other things, that the bulk of mankind should have such a knowledge of God, as suits their intellectual faculties, and other circumstances, and carries them forwards in moral improvement, than that all should stand still, or go backwards, or make less improvement in religion than tallies with their improvements in other things; also that there should be a subordination in religious advantages, rather than a perfect equality.

Natural religion also teaches us to consider God as our governor, judge, and father. Now all these superiors have two ways of administration, instruction, and providence, for the well-being of their inferiors, ordinary and extraordinary. It is therefore natural to expect upon great occasions an extraordinary interposition by revelation, miracle, and prophecy; and that especially in that infancy of the world after the deluge, which both sacred and profane history assure us of; inasmuch as both states and individuals require much more of the extraordinary interposition of governors and parents in their infancy, than afterwards: all which has a remarkable correspondence with the history of revelation, as it is in fact. And the analogical presumptions for miracles, in this and the last paragraph, seem at least equal to any presumption we have, or can have, in this our state of ignorance of the whole of things, against them.

But there is another argument in favour of miraculous interpositions, which may be drawn from the foregoing theory of human nature. I take it for granted that mankind have not been upon this earth from all eternity. Eternity neither suits an imperfect, finite race of beings, nor our habitation, the earth. It cannot have revolved round the sun, as it does now, from all eternity; it must have had such changes made in it from its own

fabric and principles, from the shocks of comets, &c. in infinite time, as would be inconsistent with our survival. There was therefore a time when man was first placed upon the earth. In what state was he then placed? An infant, with his mind a blank, void of ideas, as children now are born? He would perish instantly, without a series of miracles to preserve, educate, and instruct him. Or if he be supposed an adult with a blank mind, *i. e.* without ideas, associations, and the voluntary powers of walking, handling, speaking, &c. the conclusion is the same; he must perish also, unless conducted by a miraculous interposition and guardianship. He must therefore have so much of knowledge, and of voluntary and secondarily automatic powers, amongst which speech must be reckoned as a principal one, impressed upon him in the way of instinct, as would be necessary for his own preservation, and that of his offspring, and this instinct is, to all intents and purposes, divine revelation, since he did not acquire it by natural means. It is also of the nature of prophecy; for it seems impossible for mankind to subsist upon the earth, as it now is, without some foreknowledge, and the consequent methods of providing for futurity, such, for instance, as brutes have, or even greater, since man, unprovided with manual arts, is peculiarly exposed to dangers, necessities, and hardships.

Let us next consider, how the first men are to be provided with the knowledge of God, and a moral sense: for it seems necessary, that they should be possessed of some degree of these; else the sensual and selfish desires would be so exorbitant, as to be inconsistent both with each man's own safety, and with that of his neighbour; as may be gathered from the accounts of savage nations, who yet are not entirely destitute of the knowledge of God, and the moral sense. Now, to deduce the existence and attributes of God, even in a very imperfect manner, from natural phænomena, requires, as it seems to me, far more knowledge and ratiocination, than men could have for many generations, from their natural powers; and that especially, if we suppose language not to be inspired, but attained in a natural way. And it appears, both from the foregoing account of the moral sense, and from common observation, that this requires much time, care, and cultivation, besides the previous knowledge of God, before it can be a match for the impetuosity of natural desires. We may conclude therefore, that the first men could not attain to that degree of the knowledge of God, and a moral sense, which was necessary for them, without divine inspiration.

There are several particulars in the Mosaic account of the creation; fall, and circumstances of the ancient world, which tally remarkably with the method of reasoning used here. Thus, man is at first placed in a paradise, where there was nothing noxious, and consequently where he would need less miraculous interposition in order to preserve him. He lives upon the fruits of

the earth, which want no previous arts of preparing them, and which would strike him by their smells, and after an instance or two, incite him to pluck and taste: whereas animal diet, besides its inconsistency with a state of pure innocence and happiness, requires art and preparation necessarily. There is only one man, and one woman, created, that so the occasions for exerting the social affections may not offer themselves in any great degree, before these affections are generated; but on the contrary, the affections may grow naturally, as it were, out of the occasions. The nakedness, and want of shame, in our first parents, are concurring evidences of the absence of art, acquired affections, evil, &c. *i. e.* of a paradisiacal state. In this state they learnt to give names to the animal world, perhaps from the automatic and semivoluntary exertions of the organs of speech, which the sight of the creatures, or the sound of their several cries, would excite, having probably a sufficient stock of language for communication with God, and for conversing with each other about their daily food, and other necessary things, given them by immediate instinct or inspiration. And thus they would be initiated, by naming the animals, into the practice of inventing, learning, and applying words. For the same reasons, we may suppose that they learnt many other things, and particularly the habit of learning, during their abode in paradise. Nay, it may perhaps be, that this growth of acquired knowledge, with the pleasantness of it, might put them upon learning evil as well as good, and excite the forbidden curiosity. After the fall, we find God providing them with clothes, Cain banished from the presence of God, an argument that others were permitted to have recourse to this presence to ask counsel, &c. his posterity inventing arts for themselves, Enoch and Noah walking with God before the flood, and Abraham afterwards; all the antediluvian patriarchs long-lived, the postdiluvian long-lived also for some generations; amongst other reasons, that they might instruct posterity in religious and other important truths; and the divine interpositions continuing through the whole antediluvian world, and gradually withdrawn in the postdiluvian. And it seems to me, to say the least, a very difficult thing for any man, even at this day, to invent a more probable account of the first peopling of this earth, than that which Moses has given us.

PROP. XXVIII.—*The objection made against the Miracles recorded in the Scriptures, from their being contrary to the Course of Nature, is of little or no Force.*

IT is alleged here by the objectors, that the course of nature is fixed and immutable; and that this is evinced by the concurrent testimony of all mankind in all ages; and consequently that the testimony of a few persons, who affirm the contrary, cannot be admitted; but is, *ipso facto*, invalidated by its opposing general, or even universal experience. Now to this I answer,

First, That we do not, by admitting the testimony of mankind concerning the descent of heavy bodies upon the surface of our earth, the common effects of heat and cold, &c. suppose that this invalidates the testimony of those who declare they have met with contrary appearances in certain cases. Each party testifies what they have seen; and why may not the evidence of both be true? It does not follow, because a thing has happened a thousand or ten thousand times, that it never has failed, nor ever can fail. Nothing is more common or constant, than the effect of gravity in making all bodies upon the surface of our earth tend to its centre. Yet the rare extraordinary influences of magnetism and electricity can suspend this tendency. Now, before magnetism and electricity were discovered, and verified by a variety of concurrent facts, there would have been as much reason to disallow the evidence of their particular effects attested by eye-witnesses, as there is now to disallow the particular miracles recorded in the Scriptures; and yet we see that such a disallowance would have been a hasty conclusion, would have been quite contrary to the true nature of things. And, in fact, whatever may be the case of a few persons, and particularly of those, who think that they have an interest in disproving revealed religion, the generality of mankind, learned and unlearned, philosophical and vulgar, in all ages, have had no such disposition to reject a thing well attested by witnesses of credit, because it was contrary to the general, or even universal tenor, of former observations. Now it is evident to considering persons, especially if they reflect upon the foregoing history of association, that the dispositions to assent and dissent are generated in the human mind from the sum total of the influences, which particular observations have had upon it. It follows therefore, since the bulk of mankind, of all ranks and orders, have been disposed to receive facts the most surprising, and contrary to the general tenor, upon their being attested in a certain limited degree, that extraordinary facts are not, in a certain way of considering the thing, out of the tenor of nature, but agreeable to it; that here therefore, as well as in common facts, the stress is to be laid upon the credibility of the witnesses; and that to do otherwise is an argument either of some great singularity of mind or of an undue bias.

Secondly, If it should be alleged by the objectors, that they do not mean, by the course of nature, that tenor of common observations which occurred to the first rude ages of the world, or even that tenor which is usually called so at present; but those more general laws of matter and motion, to which all the various phænomena of the world, even those which are apparently most contrary to one another, may be reduced; and that it is probable, that universal experience would concur to support the true laws of nature of this kind, were mankind sufficiently industrious and accurate in bringing together the facts, and

drawing the conclusions from them; in which case, any deviations from the tenor of nature, thus supported and explained, would be far more improbable, than according to the supposition of the foregoing paragraph; we answer, that this objection is a mere conjecture. Since we do not yet know what these true laws of matter and motion are, we cannot presume to say whether all phænomena are reducible to them, or not. Modern philosophers have indeed made great advances in natural knowledge; however, we are still in our infant state, in respect of it, as much as former ages, if the whole of things be taken into consideration. And this objection allows and supposes it to be so. Since therefore it was the proper method for former ages, in order to make advances in real knowledge to abide by the award of credible testimonies, however contrary these testimonies might appear to their then notions and analogies, so this is also the proper method for us.

If indeed we put the course of nature for that series of events, which follow each other in the order of cause and effect by the divine appointment, this would be an accurate and philosophical way of speaking; but then we must at once acknowledge, that we are so ignorant of what may be the divine purposes and appointments, of secret causes, and of the corresponding variety of events, that we can only appeal to the facts, to credible relations of what actually has been, in order to know what is agreeable to the course of nature thus explained. The Scripture miracles may not be at all contrary to its fixedness and immutability. Nor can any objection lie against them, if we consider things in this light, from the present notions of philosophical men, *i. e.* from the course of nature, understood in a popular sense; since this falls so short of the true course of nature, as here defined, *i. e.* as admitting the instrumentality of beings superior to us, men divinely inspired, good angels, evil spirits, and many other influences, of which our present philosophy can take no cognizance.

With respect to moral analogy, the case is somewhat different. If the moral attributes of God, and the general rules of his providence, be supposed to be established upon a sure footing, then a series of events, which should be contrary to these, would have a strong presumption against them. And yet it becomes us to be very diffident here also. God is infinite, and we finite: we may therefore, from seeing only a small portion, judge what we see to be different from what it is. However, revealed religion has no occasion in general for any such apology. Natural and revealed religion, the word and works of God, are in all principal things most wonderfully analogous; as has been sufficiently shewn by the advocates for revealed religion, and most especially by Bishop Butler, in his Analogy. As far, therefore, as moral analogy carries weight, there is positive evidence for the scripture miracles. And our comprehension of natural analogy

is so imperfect as scarce to afford any presumption against them ; but leaves the evidence in their favour of nearly the same strength as it would have had for other facts.

Thirdly, Let it be observed, that the evidences for the scripture miracles are so numerous, and, in other respects, so strong, as to be nearly equal to any evidences that can be brought for the most common facts. For it is very manifest, as has been observed before, that a great number of credible evidences make a sum total, that is equal to unity, or absolute certainty, as this has been considered in the foregoing part of this work, nearer than by any perceptible difference : and the greatest number can never arrive quite to unity. The evidence, therefore, for common facts cannot exceed that for the scripture miracles by more than an imperceptible difference, if we estimate evidences according to the truest and most accurate manner. Hence the nearly equal evidences for each must establish each in nearly an equal degree, unless we suppose either some such inconsistency between them, as that, common facts being allowed, the scripture miracles must be absolutely rejected, or that there is some evidence against the scripture miracles, which may be put in competition with that for them ; neither of which things can be said with any colour of reason.

Fourthly, This whole matter may be put in another, and, perhaps, a more natural, as well as a more philosophical light ; and that especially if the foregoing account of the mind be allowed. Association, *i. e.* analogy, perfect and imperfect, is the only foundation upon which we in fact do, or can, or ought to assent ; and, consequently, a dissonance from analogy, or a repugnancy thereto, is a necessary foundation for dissent. Now it happens sometimes that the same thing is supported and impugned by different analogies ; or, if we put repugnance to analogy as equivalent to miracle, that both a fact and its non-existence imply a miracle ; or, since this cannot be, that that side alone, which is repugnant to the most and the most perfect analogies, is miraculous, and therefore incredible. Let us weigh the scripture miracles in this scale. Now the progress of the human mind, as may be seen by all the inquiries into it, and particularly by the history of association, is a thing of a determinate nature ; a man's thoughts, words, and actions, are all generated by something previous ; there is an established course for these things, an analogy, of which every man is a judge from what he feels in himself, and sees in others : and to suppose any number of men, in determinate circumstances, to vary from this general tenor of human nature in like circumstances, is a miracle, and may be made a miracle of any magnitude, *i. e.* incredible to any degree, by increasing the number and magnitude of the deviations. It is, therefore, a miracle in the human mind, as great as any can be conceived in the human body, to suppose that infinite multitudes of Christians, Jews, and heathens, in the

primitive times, should have borne such unquestionable testimony, some expressly, others by indirect circumstances, as history informs us they did, to the miracles said to be performed by Christ, and his apostles, upon the human body, unless they were really performed. In like manner, the reception which the miracles recorded in the Old Testament met with, is a miracle, unless those miracles were true. Thus also the very existence of the books of the Old and New Testaments, of the Jewish and Christian religions, &c. &c. are miracles, as is abundantly shewn by the advocates for Christianity, unless we allow the scripture miracles. Here, then, a man must either deny all analogy and association, and become an absolute sceptic, or acknowledge that very strong analogies may sometimes be violated; *i. e.* he must have recourse to something miraculous, to something supernatural, according to his narrow views. The next question then will be, which of the two opposite miracles will agree best with all his other notions; whether it be more analogous to the nature of God, Providence, the allowed history of the world, the known progress of man in this life, &c. &c. to suppose that God imparted to certain select persons, of eminent piety, the power of working miracles; or to suppose that he confounded the understandings, affections, and whole train of associations, of entire nations, so as that men, who, in all other things, seem to have been conducted in a manner like all other men, should, in respect of the history of Christ, the prophets and apostles, act in a manner repugnant to all our ideas and experiences. Now, as this last supposition cannot be maintained at all upon the footing of deism, so it would be but just as probable as the first, even though the objector should deny the possibility of the being of a God. For the least presumption, that there may be a being of immense or infinite power, knowledge, and goodness, immediately turns the scale in favour of the first supposition.

Fifthly, It is to be considered, That the evidences for the scripture miracles are many, and most of them independent upon one another, whereas the dispensation itself is a connected thing, and the miracles remarkably related to each other. If therefore only so much as one miracle could be proved to have been really wrought in confirmation of the Jewish or Christian revelations, there would be less objection to the supposition of a second; and, if this be proved, still less to that of a third, &c. till at last the reluctance to receive them would quite vanish. (Which indeed appears to have been the case in the latter part of the primitive times, when the incontestable evidences for the Christian miracles had been so much examined and considered, as quite to overcome this reluctance; and it seems difficult to account for the credulity in receiving false miracles, which then appeared, but upon supposition, that many true ones had been wrought.) But it is not so with the evidences. The greatest part of these have so little dependence on the rest, as may be seen even from this chapter,

that they must be set aside separately by the objector. Here it ought to be added, that the objectors have scarce ever attempted to set aside any part of the evidence, and never succeeded in such an attempt; which is of itself a strong argument in favour of the Scriptures, since this is plainly the most natural and easy way of disproving a thing that is false. It ought also to be observed here, that the accomplishment of prophecy, by implying a miracle, does in like manner overbear the reluctance to receive miracles. So that if any considerable events, which have already happened in the world, can be proved to have been foretold in Scripture in a manner exceeding chance, and human foresight, the objection to miracles, considered in this proposition, falls to the ground at once.

Sixthly, If any one should affirm or think, as some persons seem to do, that a miracle is impossible, let him consider, that this is denying God's omnipotence, and even maintaining that man is the supreme agent in the universe.

PROP. XXIX.—*The historical Evidences for the Genuineness, Truth, and Divine Authority of the Scriptures, do not grow less from Age to Age; but, on the contrary, it may rather be presumed that they increase.*

IT is sometimes alleged as an indirect objection to the Christian religion, that the evidence for facts done in former times, and at remote places, decreases with the distance of time and place; and, consequently, that a time may come hereafter, when the evidence for the christian religion will be so inconsiderable as not to claim our assent, even allowing that it does so now. To this I answer,

First, That printing has so far secured all considerable monuments of antiquity, as that no ordinary calamities of war, dissolutions of governments, &c. can destroy any material evidence now in being, or render it less probable, in any discernible degree, to those who shall live five hundred or a thousand years hence.

Secondly, That so many new evidences, and coincidences, have been discovered in favour of the Jewish and Christian histories, since the three great concurring events of printing, the reformation of religion in these western parts, and the restoration of letters, as, in some measure, to make up for the evidences lost in the preceding times; and, since this improvement of the historical evidences is likely to continue, there is great reason to hope that they will grow every day more and more irresistible to all candid, serious inquirers.

One might also allege, if it were needful, that *our* proper business is to weigh carefully the evidence which appears at present, leaving the care of future ages to Providence; that the prophetic evidences are manifestly of an increasing nature, and

so may compensate for a decrease in the historical ones; and that though, in a gross way of speaking, the evidences for facts distant in time and place are weakened by this distance, yet they are not weakened in an exact proportion in any case, nor in any proportion in all cases. No one can think a fact relating to the Turkish empire less probable at London than at Paris, or at fifty years distance than at forty.

PROP. XXX.—*The Prophecies delivered in the Scriptures prove the Divine Authority of the Scriptures, even previously to the Consideration of the Genuineness of these Prophecies; but much more, if that be allowed.*

IN order to evince this proposition, I will distinguish the prophecies into four kinds, and shew in what manner it holds in respect of each kind.

There are then contained in the Scriptures,

First, Prophecies that relate to the state of the nations which bordered upon the land of Canaan.

Secondly, Those that relate to the political state of the Israelites and Jews in all ages.

Thirdly, The types and prophecies that relate to the office, time of appearance, birth, life, death, resurrection, and ascension of the promised Messiah, or Christ.

Fourthly, The prophecies that relate to the state of the christian church, especially in the latter times, and to the second coming of Christ.

I begin with the prophecies of the first kind, or those which relate to the state of Amalek, Edom, Moab, Ammon, Tyre, Syria, Egypt, Nineveh, Babylon, and the four great successive empires of the Babylonians, Persians, Greeks, and Romans. Now here I observe, First, That if we admit both the genuineness of these prophecies, and the truth of the common history of the Scriptures, the very remarkable coincidence of the facts with the prophecies will put their divine authority out of all doubt; as I suppose every reader will acknowledge, upon recollecting the many particular prophecies of this kind, with their accomplishments, which occur in the Old Testament. Secondly, If we allow only the genuineness of these prophecies, so great a part of them may be verified by the remains of ancient pagan history, as to establish the divine authority of that part. Thus, if Daniel's prophecies of the image, and four beasts, were written by him in the time of the Babylonian empire; if the prophecies concerning the fall of Nineveh, Babylon, Tyre, &c. be genuine, &c.; even profane history will shew, that more than human foresight was concerned in the delivery of them. Thirdly, That such of these prophetic events as remain to this day, or were evidently posterior to the delivery of the prophecies, prove their divine authority even antecedently to the consideration of their

genuineness, as is affirmed in the former part of the proposition. Of this kind are the perpetual slavery of Egypt; the perpetual desolation of Tyre and Babylon; the wild, unconquered state of the Ishmaelites; the great power and strength of the Roman empire beyond those of the three foregoing empires; its division into ten kingdoms; its not being subdued by any other, as the three foregoing were; the rise of the Mahometan religion, and Saracenic empire; the limited continuance of this empire; and the rise and progress of the empire of the Turks. To these we may add the transactions that passed between the cotemporary kingdoms of Syria and Egypt, prophesied of in the eleventh chapter of Daniel. For, since these prophecies reach down to the times of Antiochus Epiphanes, and the beginning subjection of these kingdoms to the Roman power, they cannot but have been delivered prior to the events, as may appear both from the consideration of the Septuagint translation of the book of Daniel, and the extinction of the biblical Hebrew as a living language before that time, even though the book of Daniel should not be considered as a genuine book; for which suspicion there is, however, no foundation. Lastly, we may remark, that these, and indeed all the other prophecies, have the same marks of genuineness as the rest of the Scriptures, or as any other books; that they cannot be separated from the context without the utmost violence, so that, if this be allowed to be genuine, those must also; that history and chronology were in so uncertain a state in ancient times, that the prophecies concerning foreign countries could not have been adapted to the facts, even after they had happened, with so much exactness as modern inquirers have shewn the scripture prophecies to be, by a learned nation, and much less by the Jews, who were remarkably ignorant of what passed in foreign countries; and that those prophecies, which are delivered in the manner of dream and vision, have a very strong internal evidence for their genuineness, taken from the nature of dreams, as this is explained in the foregoing part of this work.

I proceed, in the second place, to shew how the prophecies, that relate to the political state of the Jews, prove the divine authority of the Scriptures. And here, passing by many prophecies of inferior note, and of a subordinate nature, we may confine ourselves to the promise, or prophecy, of the land of Canaan, given to Abraham, Isaac, and Jacob; to the prophecies concerning the captivity of the ten tribes, and the Babylonish captivity of the two tribes, with their return after seventy years; and to those concerning the much greater captivity and desolation predicted to fall upon this chosen people, in the 28th chapter of Deuteronomy, in various places of the prophecies, and by Christ and his apostles in the New Testament. There was no natural probability, at the time when these prophecies were delivered, that any of these events should happen in the manner

in which they were predicted, and have accordingly happened; but, in some, the utmost improbability: so that it must appear to every candid intelligent inquirer, that nothing less than supernatural knowledge could have enabled those who delivered these predictions, to make them. The divine authority, therefore, of the books which contain these predictions, is unquestionable, provided we allow them to be genuine.

Now, besides the fore-mentioned evidences of this, these prophecies have some peculiar ones attending them. Thus the mere departure of the Israelites out of Egypt, in order to go to the land of Canaan, their burying Jacob in Canaan, and carrying Joseph's bones with them, plainly imply that the promise of this land had been given to their ancestors. Thus also the prophecies relating to the captivities of Israel and Judah, and to their restorations, make so large a part of the old prophets, that if they be not genuine, the whole books must be forged; and the genuineness of those in the New Testament cannot but be allowed by all.

I come now, in the third place, to speak of the types and prophecies that relate to Christ, the time of his appearance, his offices, birth, life, death, resurrection, and ascension. Many of these are applied to him by himself, and by the authors of the books of the New Testament; but there are also many others, whose discovery and application are left to the sagacity and industry of Christians in all ages. This seems to be a field of great extent, and the evidence arising from it of an increasing nature. It is probable, that the Christians of the first ages were acquainted with so many more circumstances relating to the life, death, &c. of Christ, as on this account to be able to apply a larger number of types and prophecies to him than we can. But then this may perhaps be compensated to us by the daily opening of the Scriptures, and our growing knowledge in the typical and prophetic nature of them. What is already discovered of this kind, seems no ways possible to be accounted for, but from the supposition, that God, by his power and foreknowledge, so ordered the actions, history, ceremonies, &c. of the Patriarchs and Jews, and the language of the prophets, as to make them correspond with Christ, his offices, actions, and sufferings. If any one doubt of this, let him attempt to apply the types and prophecies to any other person. I will just mention four classes, into which these types and prophecies may be distinguished, and under each of them a few remarkable instances. There are then,

First, Prophecies which evidently relate to Christ, and either to him alone, or to others in an inferior degree only. Such are that of Jacob concerning Shiloh, of Moses concerning a great prophet and lawgiver that should come after him, of Isaiah in his 52d and 53d chapters, of Daniel concerning the Messiah, many in almost all the prophets concerning a great prince, a

prince of the house of David, &c. who should make a new covenant with his people, &c. &c.

Secondly, Typical circumstances in the lives of eminent persons, as of Isaac, Joseph, Joshua, David, Solomon, Jonah; and in the common history of the Jewish people, as its being called out of Egypt.

Thirdly, Typical ceremonies in the Jewish worship, as their sacrifices in general, those of the passover and day of expiation in particular, &c. To this head we may also refer the typical nature of the high priesthood, and of the offices of king, priest, and prophet, amongst the Jews, &c.

Fourthly, The apparently incidental mention of many circumstances in these things, which yet agree so exactly, and in a way so much above chance, with Christ, as to make it evident, that they were originally intended to be applied to him. The not breaking a bone of the paschal lamb; the mention of renting the garment, and casting lots upon the vesture, by David; of offering gall and vinegar, of looking on Him whom they had pierced, of the third day upon numerous occasions, &c. are circumstances of this kind.

Now, these types and prophecies afford nearly the same evidence, whether we consider the books of the Old Testament as genuine, or no. For no one calls in question their being extant as we now have them, small immaterial variations excepted, before the time of Christ's appearance. Many of them do indeed require the common history of the New Testament to be allowed as true. But there are some, those, for instance, which relate to the humiliation and death of Christ, and the spirituality of his office, the proofs of whose accomplishment are sufficiently evident to the whole world, even independently of this.

The fourth branch of the prophetic evidences are those which relate to the christian church. Here the three following particulars deserve attentive consideration.

First, The predictions concerning a new and pure religion, which was to be set up by the coming of the promised Messiah.

Secondly, A great and general corruption of this religion, which was to follow in after times.

Thirdly, The recovery of the christian church from this corruption, by great tribulations; and the final establishment of true and pure religion, called *the kingdom of righteousness, of the saints, the New Jerusalem, &c.*

The predictions of the first and third kinds abound every where in the old prophets, in the discourses of Christ, and in the writings of the apostles. Those of the second kind are chiefly remarkable in Daniel, the Revelation, and the Epistles of St. Paul, St. Peter, St. John, and St. Jude. In how surprising a manner the events of the first and second kind have answered to the predictions, cannot be unknown to any inquisitive serious person, in any christian country. At the same time it is evident, that the predictions of these things could have no foundation in probable

conjectures when they were given. The events of the third class have not yet received their accomplishment; but there have been for some centuries past, and are still, perpetual advances and preparations made for them; and it now seems unreasonable to doubt of the natural probability of their accomplishment, unless we doubt at the same time of the truth of the religion itself. If it be true, it must, upon more diligent and impartial examination, both purify itself, and overcome all opposition.

And it is remarkably agreeable to the tenor of Providence in other things, that that accomplishment of prophecy, which will hereafter evidence the truth of the christian religion in the most illustrious manner, should be effected by present evidences of a less illustrious nature.

Let me add here, that many of the psalms are peculiarly applicable to the restoration and conversion of the Jews, and to the final prevalence and establishment of the christian church; *i. e.* to the events of the third class.

PROP. XXXI.—*The Degree of Obscurity which is found in the Prophecies of the Scriptures, is not so great as to invalidate the foregoing evidences for their Divine Authority; but, on the contrary, is itself an indirect Testimony in their Favour.*

In order to prove this proposition, I observe,

First, That there are a sufficient number of prophecies, whose interpretation is certain, clear, and precise, to shew that their agreement with the events predicted is far above the powers of chance, or human foresight. But for the proof of this point, which takes in a great compass of literature, I must refer to the authors who have treated it in detail. And as those who have examined this point with accuracy and impartiality, do, as I presume, universally agree to the position here laid down, so those who have not done so, can have no pretence for asserting the contrary; this being an historical matter, which is to be determined as others of a like kind, *viz.* by the historical evidences. The reader may, however, form some judgment, in the gross, even from the few instances, which are alleged under the last proposition.

Secondly, That, even in the types and prophecies where interpreters differ from each other, the differences are often so inconsiderable, and the agreements so general, or else the prophecy so suited to the several events, to which it is applied by different interpreters, as to exclude both chance, and human foresight, *i. e.* to infer a divine communication. This point requires also a careful and candid examination, and then, I think, cannot but be determined in the affirmative; especially when the very great number of types and prophecies is taken into consideration. Fitness in numerous instances is always an evidence of design; this is a method of reasoning allowed, explicitly or implicitly, by

all. And though the fitness may not be perfectly evident or precise in all, yet, if it be general, and the instances very numerous, the evidence of design, arising from it, may amount to any degree, and fall short of certainty by an imperceptible difference only. And indeed it is upon these principles alone, that we prove the divine power, knowledge, and goodness, from the harmonies, and mutual fitnesses, of visible things, and from final causes, inasmuch as these harmonies and fitnesses are precisely made out only in a few instances, if compared to those in which we see no more than general harmonies, with particular subordinate difficulties, and apparent incongruities.

That the reader may see in a stronger light, how fully the fitnesses, considered in the two foregoing paragraphs, exclude chance, and infer design, let him try to apply the types and prophecies of the four classes before-mentioned to other persons and events besides those to which christian interpreters have applied them; and especially let him consider the types and prophecies relating to Christ. If design be excluded, these ought to be equally, or nearly so, applicable to other persons and events; which yet, I think, no serious considerate person can affirm. Now, if chance be once excluded, and the necessity of having recourse to design admitted, we shall be instantly compelled to acknowledge a contrivance greater than human, from the long distances of time intervening between the prophecy and the event, with other such like reasons.

Thirdly, I observe that those types and prophecies, whose interpretation is so obscure, that interpreters have not been able to discover any probable application, cannot any ways invalidate the evidence arising from the rest. They are analogous to those parts of the works of nature, whose uses, and subserviency to the rest, are not yet understood. And as no one calls in question the evidences of design, which appear in many parts of the human body, because the uses of others are not yet known; so the interpretations of prophecy, which are clearly or probably made out, remain the same evidence of design, notwithstanding that unsurmountable difficulties may hitherto attend many other parts of the prophetic writings.

Fourthly, It is predicted in the prophecies, that in the latter times great multitudes will be converted to the christian faith; whereas those who preach or prophesy, during the great apostasy, shall be able to do this only in an obscure, imperfect manner, and convert but few. Now the past and present obscurity of prophecy agrees remarkably with this prediction; and the opening, which is already made, since the revival of letters, in applying the prophecies to the events, seems to presage, that the latter times are now approaching; and that by the more full discovery of the true meaning of the prophetic writings, and of their aptness to signify the events predicted, there will be such an accession of evidence to the divine authority of the Scriptures, as none

but the wilfully ignorant, the profligate, and the obdurate, can withstand. It is therefore a confirmation of the prophetic writings, that, by the obscurity of one part of them, a way should be prepared for effecting that glorious conversion of all nations, which is predicted in others, in the time and manner in which it is predicted.

PROP. XXXII.—*It is no Objection to the foregoing Evidences taken from the Types and Prophecies, that they have double or even manifold Uses and Applications; but rather a Confirmation of them.*

FOR the foregoing evidences all rest upon this foundation, *viz.* that there is an aptness in the types and prophecies to prefigure the events, greater than can be supposed to result from chance, or human foresight. When this is evidently made out from the great number of the types and prophecies, and the degree of clearness and preciseness of each, the shewing afterwards that these have other uses and applications, will rather prove the divine interposition, than exclude it. All the works of God, the parts of a human body, systems of minerals, plants, and animals, elementary bodies, planets, fixed stars, &c. have various uses and subserviencies, in respect of each other; and, if the Scriptures be the word of God, analogy would lead one to expect something corresponding hereto in them. When men form designs, they are indeed obliged to have one thing principally in view, and to sacrifice subordinate matters to principal ones; but we must not carry this prejudice, taken from the narrow limits of our power and knowledge, to Him who is infinite in them. All his ends centre in the same point, and are carried to their utmost perfection by one and the same means. Those laws, ceremonies, and incidents, which best suited the Jewish state, and the several individuals of it, were also most apt to prefigure the promised Messiah, and the state of the christian church, according to the perfect plan of these things, which, in our way of speaking, existed in the divine mind from all eternity; just as that magnitude, situation, &c. of our earth, which best suits its present inhabitants, is also best suited to all the changes which it must hereafter undergo, and to all the inhabitants of other planets, if there be any such, to whom its influence extends.

The following instance may perhaps make this matter more clearly understood. Suppose a person to have ten numbers, and as many lines, presented to his view; and to find by mensuration, that the ten numbers expressed the lengths of the ten lines respectively. This would make it evident that they were intended to do so. Nor would it alter the case, and prove that the agreement between the numbers and lines arose, without design, and by chance, as we express it, to allege that these numbers had some other relations; that, for instance, they pro-

ceeded in arithmetical or geometrical progression, were the squares or cubes of other numbers, &c. On the contrary, any such remarkable property would rather increase than diminish the evidence of design in the agreement between the numbers and lines. However, the chief thing to be inquired into would plainly be, whether the agreement be too great to be accounted for by chance. If it be, design must be admitted.

PROP. XXXIII.—*The Application of the Types and Prophecies of the Old Testament by the Writers of the New does not weaken the Authority of these Writers, but rather confirm it.*

FOR the objections, which have been made to the writers of the New Testament on this head, have been grounded principally upon a supposition, that when an obvious literal sense of a passage, or a manifest use of a ceremony, suited to the then present times, is discovered, all others are excluded, so as to become misapplications. But this has been shewn in the last proposition to be a prejudice arising from the narrowness of our faculties and abilities. Whence it follows, that, if the scripture types and prophecies be remarkably suited to different things, which is a point that is abundantly proved by learned men, they cannot but, in their original design, have various senses and uses. And it is some confirmation of the divine authority of the writers of the New Testament, that they write agreeably to this original design of God.

It may perhaps afford some satisfaction to the reader to make some conjectures concerning the light in which the types and prophecies, which have double senses, would appear first to the ancient Jews, and then to those who lived in the time of our Saviour. From hence we may judge in what light it is reasonable they should be taken by us.

Let our instance be the second psalm, which we are to suppose written by David himself, or, at least, in the time of his reign. It is evident, that there are so many things in this psalm peculiarly applicable to David's ascent to the throne by God's special appointment, to the opposition which he met with both in his own nation and from the neighbouring ones, and to his victories over all his opposers through the favour of God, that the Jews of that time could not but consider this psalm as relating to David. Nay, one can scarce doubt, but the Psalmist himself, whether he seemed to himself to compose it from his own proper fund, or to have it dictated immediately by the Spirit of God, would have David principally in view. At the same time it is evident, that there are some passages, particularly the last, *Blessed are all they that put their trust in him, i. e. in the Son*, which it would be impious, especially for an Israelite, to apply to David, and which therefore no allowance for the sublimity of the eastern poetry could make applicable. It may be

supposed therefore, that many, or most, considered such passages as having an obscurity in them, into which they could no ways penetrate; whereas a few perhaps, who were peculiarly enlightened by God, and who meditated day and night upon the promises made to their ancestors, particularly upon those to Abraham, would presume or conjecture that a future person, of a much higher rank than David, was prefigured thereby. And the case would be the same in regard to many other psalms: they would appear to the persons of the then present times both to respect the then present occurrences, and also to imitate some future more glorious ones; and would mutually support this latter interpretation in each other.

When the prophets appeared in the declension and captivities of the kingdoms of Israel and Judah, the same interpretation would be strengthened, and the expectations grounded thereon increased by the plainer and more frequent declarations of the prophets concerning such a future person, and the happiness which would attend his coming. The great and various sufferings of this chosen people, their return and deliverance, their having their scriptures collected into one view by Ezra, and read in their synagogues during the interval from Ezra to Christ, the figurative senses put upon dreams, visions, and parables, in their Scriptures, &c. would all concur to the same purpose, till at last it is reasonable to expect, that the Jews in our Saviour's time would consider many of the institutions and ceremonies of their law, of the historical events of the psalms appointed for the temple worship, and of the inspired declarations of the prophets, as respecting the future times of the Messiah; and this, in some cases, to the exclusion of the more obvious senses and uses, which had already taken place; being led thereto by the same narrow-mindedness, which makes some in these days reject the typical and more remote sense, as soon as they see the literal and more immediate one. Now, that this was, in fact, the case of the Jews in the time of Christ, and for some time afterwards, appears from the New Testament, from the Christian writers of the first ages, and from the Talmudical ones.

A great part, however, of the scripture types and prophecies appeared to the Jews to have no relation to their promised Messiah, till they were interpreted by the event. They expected a person that should correspond to David and Solomon, two glorious princes; but they did not see how Isaac, or the paschal lamb, should typify him; or that the circumstance of being called out of Egypt, the appellation of Nazarene, or the parting garments, and casting lots upon a vesture, should contribute to ascertain him. However, it is certain, that to persons who had for some time considered their Scriptures in the typical, prophetic view mentioned in the last paragraph, every remarkable circumstance and coincidence of this kind, verified by the event, would be a new accession of evidence, provided we suppose a

good foundation for miracles, or prophecies of undoubted import, to have been laid previously. Nay, such coincidences may be considered not only as arguments to the Jews of Christ's time, but as solid arguments in themselves, and that exclusively of the context. For though each of these coincidences, singly taken, affords only a low degree of evidence, and some of them scarce any: yet it is a thing not to be accounted for from chance, that separate passages in the Old Testament should be applicable to the circumstances of Christ's life, by an illusion either of words or sense, in ten or an hundred times a greater number, than to any other persons, from mere accident. And this holds in a much higher degree, if the separate passages or circumstances be subordinate parts of a general type. Thus the parting the garments, the offering vinegar and gall, and the not breaking a bone, have much more weight, when it is considered, that David, and the paschal lamb, are types of the Messiah. And when the whole evidence of this kind, which the industry of pious Christians has brought to light in the first ages of Christianity, and again since the revival of letters, is laid together, it appears to me to be both a full proof of the truth of the christian religion, and a vindication of the method of arguing from typical and double senses.

It may be added in favour of typical reasoning, that it corresponds to the method of reasoning by analogy, which is found to be of such extensive use in philosophy. A type is indeed nothing but an analogy, and the scripture types are not only a key to the Scriptures, but seem also to have contributed to put into our hands the key of nature, analogy. And this shews us a new correspondence or analogy between the word and works of God. However, since certain well-meaning persons seem to be prejudiced against typical and double senses, I will add some arguments, whereby the writers of the New Testament may be defended upon this footing also.

First, then, Since the Jews in the times of the writers of the New Testament, and consequently these writers themselves, were much given to typical reasonings, and the application of passages of the Old Testament in a secondary sense to the times of the Messiah, this would be a common foundation for these writers, and those to whom they wrote, to proceed upon, derived from association, and the acquired nature of their minds. And it is as easy to conceive, that God should permit them to proceed upon this foundation for the then present time, though it would not extend to the world in general, to distant ages, and to persons of different educations, as that they should be left to the workings of their own acquired natures in many other respects, notwithstanding the supernatural gifts bestowed upon them in some; or as it is to conceive, that God should confer any thing, existence, happiness, &c. in any particular manner or degree.

Secondly, There are some passages in the New Testament

quoted from the Old in the way of mere allusion. This cannot, I think, be true of many, where the passage is said to be *fulfilled*, without doing violence to the natural sense of the words, and of the context, in the New Testament: however, where it is, it entirely removes the objection here considered.

Thirdly, If we should allow, that the writers of the New Testament were sometimes guilty of erroneous reasonings in these or other matters, still this does not affect their moral characters at all; nor their intellectual ones, which are so manifest from the general soundness and strength of their other reasonings, in any such manner as to be of importance in respect of the evidence for the general truth of the Scriptures, or for their divine authority in the first and lowest sense above considered.

PROP. XXXIV.—*The moral Characters of Christ, the Prophets, and Apostles, prove the Truth and Divine Authority of the Scriptures.*

LET us begin with the consideration of the character of Christ. This, as it may be collected from the plain narrations of the gospels, is manifestly superior to all other characters, fictitious or real, whether drawn by historians, orators, or poets. We see in it the most entire devotion and resignation to God, and the most ardent and universal love to mankind, joined with the greatest humility, self-denial, meekness, patience, prudence, and every other virtue, divine and human. To which we are to add, that, according to the New Testament, Christ, being the Lord and creator of all, took upon himself the form of a servant, in order to save all; that, with this view, he submitted to the helplessness and infirmities of infancy, to the narrowness of human understanding, and the perturbations of human affections; to hunger, thirst, labour, weariness, poverty, and hardships of various kinds, to lead a sorrowful, friendless life, to be misunderstood, betrayed, insulted, and mocked, and at last to be put to a painful and ignominious death; also (which deserves our most serious consideration, however incongruous to our narrow apprehensions it may appear at first sight) to undergo the most bitter mental agony previously. Here then we may make the following observations.

First, That, laying down the present disorders of the moral world, and the necessity of the love of God and our neighbour, and of self-annihilation, in order to the pure and ultimate happiness of man, there seems to be a necessity also for a suffering Saviour. At least, one may affirm, that the condescension of Christ, in leaving the glory which he had with the Father, before the foundation of the world, and in shewing himself a perfect pattern of obedience to the will of God, both in doing and suffering, has a most peculiar tendency to rectify the present moral depravity of our natures, and to exalt us thereby to pure

spiritual happiness. Now it is remarkable, that the evangelists and apostles should have thus hit upon a thing, which all the great men amongst the ancient heathens missed, and which, however clear it does and ought now to appear to us, was a great stumbling-block to them, as well as to the Jews; the first seeking after wisdom, *i. e.* human philosophy and eloquence; and the last requiring a sign, or a glorious temporal Saviour. Nor can this be accounted for, as it seems to me, but by admitting the reality of the character, *i. e.* the divine mission of Christ, and the consequent divine inspiration of those who drew it, *i. e.* the truth and divine authority of the New Testament.

Secondly, If we allow only the truth of the common history of the New Testament, or even, without having recourse to it, only such a part of the character of Christ, as neither ancient nor modern Jews, heathens, or unbelievers, seem to contest, it will be difficult to reconcile so great a character, claiming divine authority, either with the moral attributes of God, or indeed with itself, upon the supposition of the falsehood of that claim. One can scarce suppose, that God would permit a person apparently so innocent and excellent, so qualified to impose upon mankind, to make so impious and audacious a claim without having some evident mark of imposture set upon him; nor can it be conceived, how a person could be apparently so innocent and excellent, and yet really otherwise.

Thirdly, The manner in which the evangelists speak of Christ, shews that they drew after a real copy, *i. e.* shews the genuineness and truth of the gospel history. There are no direct encomiums upon him, no laboured defences or recommendations. His character arises from a careful, impartial examination of all that he said and did, and the evangelists appear to have drawn this greatest of all characters without any direct design to do it. Nay, they have recorded some things, such as his being moved with the passions of human nature, as well as being affected by its infirmities, which the wisdom of this world would rather have concealed. But their view was to shew him to the persons to whom they preached, as the promised Messiah of the Jews, and the Saviour of mankind; and as they had been convinced of this themselves from his discourses, actions, sufferings, and resurrection, they thought nothing more was wanting to convince such others as were serious and impartial, but a simple narrative of what Jesus said and did. And if we compare the transcendent greatness of this character with the indirect manner in which it is delivered, and the illiterateness and low condition of the evangelists, it will appear impossible that they should have forged it, that they should not have had a real original before them, so that nothing was wanting but to record simply and faithfully. How could mean and illiterate persons excel the greatest geniuses, ancient and modern, in drawing a character? How came they to draw it in an indirect manner? This is indeed a strong

evidence of genuineness and truth: but then it is of so reclusive and subtle a nature, and, agreeably to this, has been so little taken notice of by the defenders of the christian religion, that one cannot conceive the evangelists were at all aware that it was an evidence. The character of Christ, as drawn by them, is therefore genuine and true; and consequently proves his divine mission both by its transcendent excellence, and by his laying claim to such a mission.

Here it ought to be particularly remarked, that our Saviour's entire devotion to God, and sufferings for the sake of men in compliance with his will, is a pitch of perfection, which was never proposed, or thought of, before his coming (much less attempted or attained;) unless as far as this is virtually included in the precepts for loving God above all, and our neighbour as ourselves, and other equivalent passages in the Old Testament.

We come, in the next place, to consider the characters of the prophets, apostles, and other eminent persons mentioned in the Old and New Testaments. Here then we may observe,

First, That the characters of the persons who are said in the Scriptures to have had divine communications and a divine mission, are so much superior to the characters which occur in common life, that we can scarce account for the more eminent single ones, and therefore much less for so large a succession of them, continued through so many ages, without allowing the divine communications and assistance, which they allege. It is true indeed, that many of these eminent persons had considerable imperfections, and some of them were guilty of great sins occasionally, though not habitually. However, I speak here of the balance, after proper deductions are made, on account of these sins and imperfections, and leave it to the impartial reader to consider, whether the prophets, apostles, &c. were not so much superior, not only to mankind at an average, but even to the best men amongst the Greeks and Romans, as is not fairly to be accounted for by the mere powers of human nature.

Secondly, If this should be doubted, their characters are, however, far too good to allow the supposition of an impious fraud and imposture; which must be the case, if they had not divine authority. We have therefore this double argument for the divine authority of the Scriptures, if we only allow the genuineness and truth of its common history.

Thirdly, The characters of the eminent persons mentioned in the Scriptures arise so much, in an indirect way, from the plain narrations of facts, their sins and imperfections are so fully set forth by themselves, or their friends, with their condemnation and punishment, and the vices of wicked men, and the opposers of God and themselves, related in so candid a way, with all fit allowances, that we have in this a remarkable additional evidence for the truth of this part of the scripture history, besides the common ones before given, which extend to the whole.

Fourthly, The eminent persons here considered are sometimes charged by unbelievers with crimes, where, all circumstances being duly weighed, they did nothing unjustifiable, nothing more than it was their indispensable duty to God to do; as Abraham in preparing to sacrifice Isaac, Joshua in destroying the Canaanites, &c. We cannot determine an action to be sinful from a mere, abstracted, general definition of it, as that it is the taking away the life of a man, &c. but must carefully weigh all circumstances. And indeed there are no maxims in morality that are quite universal; they can be no more than general; and it is sufficient for human purposes, that they are so much, notwithstanding that the addition of peculiar circumstances makes the action vary from the general rule. Now the certain command of God may surely be such a circumstance.

Lastly, The perfection of virtue being of an ever-growing infinite nature, it is reasonable to expect, that mankind in its infant state, soon after the flood, and so onwards for some time, should be more imperfect, and have less of the pure and sublime precepts concerning indifference to this world, and all present things, universal unlimited charity, mortification, abstinence, chastity, &c. delivered to them, than we Christians have, and less expected from them. And yet, upon the whole, the patriarchs and eminent persons among the Jews were *burning and shining lights* in their respective generations. However, it is also to be observed here, that the most sublime precepts of the gospel do appear from the first in the Old Testament, though under a veil; and that they were gradually opened more and more under the later prophets.

PROP. XXXV.—*The Excellence of the Doctrine contained in the Scriptures is an Evidence of their Divine Authority.*

THIS is an argument which has great force, independently of other considerations. Thus let us suppose, that the author of the gospel which goes under St. Matthew's name, was not known, and that it was unsupported by the writers of the primitive times; yet such is the unaffected simplicity of the narrations, the purity of the doctrine, and the sincere piety and goodness of the sentiments, that it carries its own authority with it. And the same thing may be said in general of all the books of the Old and New Testaments; so that it seems evident to me, that, if there was no other book in the world besides the Bible, a man could not reasonably doubt of the truth of revealed religion. *The mouth speaks from the abundance of the heart.* Men's writings and discourses must receive a tincture from their real thoughts, desires, and designs. It is impossible to play the hypocrite in every word and expression. This is a matter of common daily observation, that cannot be called in question; and the more any one thinks upon it, or attends to what passes

in himself or others, to the history of the human thoughts, words, and actions, and their necessary mutual connexions, *i. e.* to the history of association, the more clearly will he see it. We may conclude, therefore, even if all other arguments were set aside, that the authors of the books of the Old and New Testaments, whoever they were, cannot have made a false claim to divine authority.

But there is also another method of inferring the divine authority of the Scriptures from the excellence of the doctrine contained therein. For the Scriptures contain doctrines concerning God, providence, a future state, the duty of man, &c. far more pure and sublime than can any ways be accounted for from the natural powers of men, so circumstanced as the sacred writers were. That the reader may see this in a clearer light, let him compare the several books of the Old and New Testaments with the cotemporary writers amongst the Greeks and Romans, who could not have less than the natural powers of the human mind; but might have, over and above, some traditional hints derived ultimately from revelation. Let him consider whether it be possible to suppose that Jewish shepherds, fishermen, &c. should, both before and after the rise of the heathen philosophy, so far exceed the men of the greatest abilities and accomplishments in other nations, by any other means than divine communications. Nay, we may say, that no writers, from the invention of letters to the present times, are equal to the penmen of the books of the Old and New Testaments, in true excellence, utility, and dignity; which is surely such an internal criterion of their divine authority as ought not to be resisted. And, perhaps, it never is resisted by any, who have duly considered these books, and formed their affections and actions according to the precepts therein delivered.

An objection is sometimes made against the excellence of the doctrines of the Scriptures, by charging upon them erroneous doctrines, established by the authority of creeds, councils, and particular churches. But this is a manner of proceeding highly unreasonable. The unbeliever, who pays so little regard to the opinions of others, as to reject what all churches receive, the divine mission of Christ, and the evidences for the truth of the Scriptures, ought not at other times to suppose the churches, much less any particular one, better able to judge of the doctrine; but should in the latter case, as well as the first, examine for himself; or if he will take the doctrine upon trust, he ought much rather to take the evidence so.

If it can be shewn, either that the true doctrine of the Scriptures differs from that which is commonly received, or that reason teaches something different from what is commonly supposed, or, lastly, that we are insufficient judges what are the real doctrines of Scripture, or reason, or both, and, consequently, that we ought to wait with patience for farther light, all objec-

tions of this kind fall to the ground. One may also add, that the same arguments which prove a doctrine to be very absurd, prove also, for the most part, that it is not the sense of the passage; and that this is a method of reasoning always allowed in interpreting profane authors.

PROP. XXXVI.—*The many and great Advantages which have accrued to the World from the Patriarchal, Judaical, and Christian Revelations, prove the Divine Authority of the Scriptures.*

THESE advantages are of two sorts, relating respectively to the knowledge and practice of religion. I begin with the first.

Now it is very evident, that the christian revelation has diffused a much more pure and perfect knowledge of what is called natural religion, over a great part of the world, *viz.* wherever the profession either of Christianity or Mahometanism prevails. And the same thing will appear, in respect of the Judaical and patriarchal revelations, to those who are acquainted with ancient history. It will be found very difficult, by such persons, to account even for the pagan religions, without recurring to such patriarchal communications with God as are mentioned in the Pentateuch, and to the more full revelations made to the Jews. So that one is led to believe, that all that is good in any pagan or false religion is of divine original; all that is erroneous and corrupt, the offspring of vanity, weakness, and wickedness of men; and that, properly speaking, we have no reason from history to suppose, that there ever was any such thing as mere natural religion, *i. e.* any true religion, which men discovered to themselves by the mere light of nature. These positions seem to follow from inquiries into the antiquities of the heathen world, and of their religions. The heathen religions all appear to be of a derivative nature; each circumstance in the inquiry confirms the scriptural accounts of things, and sends us to the revelations expressly mentioned, or indirectly implied, in the Old Testament, for the real original of the pagan religions in their simple state. This opinion receives great light and confirmation from Sir Isaac Newton's Chronology.

It appears also very probable to me, that a careful examination of the powers of the human understanding would confirm the same position; and that admitting the novelty of the present world, there is no way of accounting for the rise and progress of religious knowledge, as it has taken place in fact, without having recourse to divine revelation. If we admit the patriarchal, Judaical, and christian revelations, the progress of natural religion, and of all the false pretences to revelation, will fairly arise (at least, appear possible in all cases, and probable in most) from the circumstance of things, and the powers of human nature; and the foregoing doctrine of association will cast some light upon the subject. If we deny the truth of these

revelations, and suppose the Scriptures to be false, we shall cast utter confusion upon the inquiry, and human faculties will be found far unequal to the task assigned to them.

Secondly, If we consider the practice of true religion, the good effects of revelation are still more evident. Every man who believes must find himself either excited to good, or deterred from evil, in many instances, by that belief; notwithstanding that there may be many other instances, in which religious motives are too weak to restrain violent and corrupt inclinations. The same observations occur daily with regard to others, in various ways and degrees. And it is by no means conclusive against this obvious argument for the good effects of revelation upon the morals of mankind, to allege that the world is not better now than before the coming of Christ. This is a point which cannot be determined by any kind of estimation in our power to make; and, if it could, we do not know what circumstances would have made the world much worse than it is, had not Christianity interposed. However, it does appear to me very *probable*, to say the least, that Jews, and Christians, notwithstanding all their vices and corruptions, have, upon the whole, been always better than heathens and unbelievers. It seems to me also, that as the knowledge of true, pure, and perfect religion is advanced and diffused more and more every day, so the practice of it corresponds thereto: but then this, from the nature of the thing, is a fact of a less obvious kind; however, if it be true, it will become manifest in due time. Let us suppose a person to maintain that civil government, the arts of life, medicines, &c. have never been of use to mankind, because it does not appear, from any certain calculation, that the sum total of health and happiness is greater among the polite nations than among the barbarous ones. Would it not be thought a sufficient answer to this, to appeal to the obvious good effects of these things in innumerable instances, without entering into a calculation impossible to be made? However, it does here also appear, that, as far as we are able to judge, civilized countries are, upon the whole, in a more happy state than barbarous ones, in all these respects.

Now as the divine original of revelation may be directly concluded from its being the sole fountain of all religious knowledge, if that can be proved; so it will follow in an indirect way, if we suppose that revelation has only promoted the knowledge and practice of true religion. It is not likely that folly or deceit of any kind should be eminently serviceable in the advancement of wisdom and virtue. Every tree must produce its proper fruit. Enthusiasm and imposture cannot contribute to make men prudent, peaceable and moderate, disinterested and sincere.

PROP. XXXVII.—*The wonderful Nature, and superior Excellence, of the Attempt made by Christ and his Apostles, are Evidences of their Divine Authority.*

THIS attempt was that of reforming all mankind, and making them happy in a future state. And, when we consider first the attempt itself, and then the assurance of success in it, which appears in all their words and actions, by ways both direct and indirect, there arises from thence alone a strong presumption in their favour, as well as in favour of the authors of the books of the Old Testament, who have concurred in the same attempt, though less informed of the true nature and full extent of it. For ideas and purposes of this kind could scarce enter into the hearts of weak or wicked men; much less could such persons enter upon and prosecute so great an undertaking with such prudence, integrity, and constancy, or form such right judgments both of the opposition they should meet with, and of the prevalence of their own endeavours, and those of their successors, over this opposition. Nay, one may say, that nothing less than supernatural assistance could qualify them for these purposes. No design of this kind was ever formed, or thought of, till the coming of Christ; and the pretences of enthusiasts and impostors to the same commission since have all been copied from Christ, as being necessary to their succeeding in any measure, since his coming. If it be supposed to be the true interpretation and meaning of the Scriptures, to publish final redemption, conversion, and salvation to all mankind, even the most wicked, in some distant future state, this will add great force to the present argument.

PROP. XXXVIII.—*The Manner in which the Love of God, and of our Neighbour, is taught and inculcated in the Scriptures, is an Evidence of their Divine Authority.*

FOR it appears, that the Scriptures do virtually include, or even expressly assert, all that the modern philosophy has discovered or verified concerning these important subjects; which degree of illumination, as it can with no plausibility be accounted for in illiterate men in the time of Augustus from natural causes, so much less can it in the preceding times from Christ up to Moses. This proposition is included in the thirty-fifth: however, the subject of it is of so much importance, as to deserve a separate place.

Here then, First, We may observe, that Moses commands the Israelites to love God with all the heart, and soul, and might, whereas they are to love their neighbours only as themselves. Now, though this infinite superiority of the love due to God over that due to our neighbour be perfectly agreeable to that infinite majesty and goodness of God, and nothingness of the creatures,

which every new discovery in philosophy now opens to view, yet it was so little known many ages after Moses amongst the wisest of the Greeks and Romans, that we cannot ascribe it to his mere natural sagacity. The natural equality of all men, and the self-annihilation, implied in the precept of loving *all* our brethren as well as ourselves, are also the genuine dictates of true philosophy.

Secondly, In order to shew the divine authority of the Scriptures, from the manner in which the love of God is taught in them, we must consider not only the direct precepts concerning this love, but also all those concerning hope, trust, fear, thankfulness, delight, &c. for all these concur to inculcate and beget in us the love of God. The same may be said of all the scriptural descriptions of God, and his attributes, and of the addresses of good men to him, which are there recorded. God is declared in the Scriptures to be light, love, goodness, the source of all happiness and perfection, the father and protector of all, &c. And the eminent persons who composed the psalms, and other such like addresses to God, appear to have devoted themselves entirely to him. Now, when we reflect, that there is scarce any thing of this kind in the writings of the philosophers who preceded Christ, and nothing comparable to the scripture expressions even in those who came after him; when we farther reflect, that the writings of the ablest and best men of the present times contain nothing excellent of the devotional kind, but what may be found in the Scriptures, and even in the Old Testament, there seems to be a necessity for having recourse to divine inspiration, as the original source of this great degree of illumination in the patriarchs, prophets, and apostles.

Thirdly, Good persons are, in the Scriptures, styled *children of God; members of Christ; partakers of the divine nature; one with God and Christ, as Christ is with God; members of each other; heirs of God, and co-heirs of Christ; heirs of all things, &c.* expressions which have the strongest tendency to raise in us an unbounded love to God, and an equal one to our neighbour, and which include and convey the most exalted, and at the same time the most solid conceptions, of this great system of things. And if we suppose that these high titles and privileges are, according to the Scriptures, to be hereafter extended to all mankind, the divine original of the Scriptures will receive a new accession of evidence on this account.

PROP. XXXIX.—*The Doctrine of the necessary Subserviency of Pain to Pleasure, unfolded in the Scriptures, is an Evidence of their Divine Authority.*

THE Scriptures give frequent and strong intimations, that the ultimate happiness which they promise, is not to be obtained in this our degenerate state, but by a previous passage through pain.

Blessed are they that mourn. We must rejoice in tribulation. The palm-bearing multitude comes out of great tribulation. The Captain of our salvation, and therefore all his soldiers, must be made perfect through sufferings. Without shedding of blood there is no remission of sins. It is good for us to be afflicted, that we may learn to keep the commandments of God. The Jews must be captivated, and undergo the severest afflictions, before they can be made happy finally, as the people of God. *Man must eat his bread in the sweat of his brow all his life, and return to dust at last; and yet still the seed of the woman shall bruise the serpent's head, and gain re-admission to the Tree of Life, whose leaves shall heal the nations, &c. &c.* Now there is a surprising correspondence between such expressions as these, and many modern discoveries, which shew that pain is, in general, introductory and subservient to pleasure; and particularly that such is the present frame of our natures, and constitution of the external world, which affects our organs, that we cannot be delivered from the sensuality and selfishness, that seize upon us at our first entrance into life, and advanced to spirituality and disinterestedness, to the love of God and our neighbour, we cannot have our wills broken, and our faculties exalted and purified, so as to relish happiness wherever we see it, but by the perpetual correction and reformation of our judgments and desires from painful impressions and associations. And all philosophical inquiries of this kind seem to cast a peculiar light and evidence upon the scripture expressions before mentioned, and to make their accuracy, and congruity with experience and observation, be much more plainly seen and felt.

PROP. XL.—*The mutual Instrumentality of Beings to each other's Happiness and Misery, unfolded in the Scriptures, is an Argument of their Divine Authority.*

To this head is to be referred all that the Scriptures deliver concerning good and evil angels; Christ, the Lord of all, becoming the Redeemer of all; Adam's injuring all his posterity through his frailty; Abraham's becoming the father of the faithful, and all nations being blessed through him; the Jews being the keepers of the oracles of God, and of the true religion; tyrants being scourges in the hand of God; the fulness of the Gentiles being the occasion of the final restoration of the Jews; and, in general, the doctrine that God prepares and disposes of every thing so as that nothing is for itself alone, but every person and nation has various relations to others, co-operates with them through Christ, who is *the Head*, and through whom *the whole body being fitly joined together, and compacted by that which every joint supplieth, increaseth and edifieth itself in love, till all things, both in heaven and earth, arrive, in their several orders, to the measure of the stature of the fulness of Christ.* Now whoever compares these

scripture expressions and doctrines with the various mutual relations, subserviencies, and uses of the parts of the external world, heavenly bodies, meteors, elements, animals, plants, and minerals, to each other, cannot help seeing a wonderful analogy between the works of God and the Scriptures, so wonderful as justly to entitle the last to the appellation of the word of God.

And thus we may perceive, that the scripture account of the fall of man, his redemption by Christ, and the influences exerted upon him by good and evil angels, is so far from affording an objection against the christian religion, that it is a considerable evidence for it, when viewed in a truly philosophical light. God works in every thing by means, by those which, according to our present language and short-sightedness, are termed bad and unfit, as well as by the good and evidently fit ones; and all these means require a definite time, before they can accomplish their respective ends. This occurs to daily observation in the course and constitution of nature. And the scripture doctrines concerning the fall, the redemption by Christ, and the influences of good and evil angels, are only such intimations concerning the principal invisible means that lead man to his ultimate end, happiness in being united to God, as accelerate him in his progress thither. According to the Scriptures, Adam hurts all, through frailty; Christ saves all, from his love and compassion to all; evil angels tempt, through malice; and good ones assist and defend, in obedience to the will of God, and his original and ultimate design of making all happy. These things are indeed clothed in a considerable variety of expressions, suited to our present ways of acting, conceiving, and speaking, (which ways are, however, all of divine original, God having taught mankind, in the patriarchal times, the language, as one may say, in which he spake to them then and afterwards); but these expressions can have no greater real import, than that of signifying to us the means made use of by God; he being, according to the Scriptures, as well as reason, the one only real agent in all the transactions that relate to man, to angels, &c. And to object to the method of producing happiness by this or that means, because of the time required to accomplish the end, of the mixture of evil, &c. is to require, that all God's creatures should at once be created infinitely happy, or rather have existed so from all eternity, *i. e.* should be *gods*, and not *creatures*.

PROP. XLI.—*The Divine Authority of the Scriptures may be inferred from the superior Wisdom of the Jewish Laws considered in a political Light; and from the exquisite Workmanship shewn in the Tabernacle and Temple.*

ALL these were originals amongst the Jews, and some of them were copied partially and imperfectly by ancient heathen nations. They seem also to imply a knowledge superior to the respective

times. And I believe, that profane history gives sufficient attestation to these positions. However, it is certain from Scripture, that Moses received the whole body of his laws, also the pattern of the Tabernacle, and David the pattern of the Temple, from God; and that Bezaleel was inspired by God for the workmanship of the Tabernacle. Which things, being laid down as a sure foundation, may encourage learned men to inquire into the evidences from profane history, that the knowledge and skill to be found amongst the Jews were superior to those of other nations at the same period of time, *i. e.* were supernatural.

PROP. XLII.—*The Want of Universality in the Publication of Revealed Religion is no Objection to it; but, on the contrary, the Time and Manner in which the Scriptures were written, and delivered to the world, are Arguments for their Divine Authority.*

HERE I observe,

First, That objections of this kind ought never to be admitted against historical evidence; and in fact, are not, upon other subjects. It is evident, as was observed in the beginning of this chapter, that to allow the truth of the scripture history, is to allow the truth of the christian religion. Now it is very foreign to the purpose of an inquiry into the truth of the scripture history, to allege that it has not been made known to all mankind, in all ages, and under all circumstances of each individual. It must require much abstracted and subtle reasoning, and such as can never be put in competition with plain historical evidence, to connect this objection with the proposition objected to. This is therefore, at least, a strong presumption against the validity of such an objection.

Secondly, This objection seems to derive its whole force from such positions, relating to the moral attributes of God, as make it necessary for us to suppose, either that he deals with all his creatures at present in an equally favourable manner, or, at least, that nothing shall be ultimately wanting to their happiness. Now the first supposition appears, upon the most transient view which we take of things, to be utterly false. There are differences of all degrees at present, in respect of all the good things which God has given us to enjoy; and therefore may be in the best of all good things, revealed religion. And indeed, if it was otherwise in respect of revealed religion, one strong argument in its favour would be wanting, *viz.* its analogy with the course of nature. The moral attributes of God are to be deduced from observations made upon the course of nature. If therefore the tenor of revelation be agreeable to that of nature, it must be so to the moral attributes of God. But if any one suppose, in the second place, that, notwithstanding present and apparent differences in the circumstances of God's creatures, there are no real

and ultimate ones; at least, that the balance will ultimately be in favour of each individual finitely, or perhaps infinitely; I answer, that this supposition is as agreeable to revelation as to natural reason; that there are as probable evidences for it in the word of God, as in his works, there being *no acceptance of persons with God, no difference between the Jew and the Gentile*, according to the Scriptures; and that we may infer as strongly from the Scriptures that Christ will save all, as it can be inferred from philosophy that all will be made happy in any way; both which positions I shall endeavour to establish hereafter, with the mutual illustrations and confirmations which these glorious doctrines of natural and revealed religion afford to each other. And the gradual diffusion of the patriarchal, Judaical, and christian revelations, compared with the prophecies relating to the future kingdom of Christ, and with the present circumstances of things, will afford great satisfaction and joy to every pious, benevolent person, who inquires into this subject. These considerations will incline him to believe, that the gospel will, sooner or later, be preached to *every creature in heaven, in earth, under the earth, &c.* and not only preached, but received, obeyed, and made the means of unspeakable happiness to them. And thus this objection will be removed not only in speculation, and according to reason, but in fact, from the present unhappy objectors; and *they will look on Him whom they have pierced.*

Thirdly, Having shewn that a gradual and partial promulgation is not inconsistent with the supposition of a true revelation, we may farther affirm, that the particular time and manner, in which the several patriarchal, Judaical, and christian revelations have been published in the world, are even arguments in their favour. This subject has been well handled by various learned men, particularly by Mr. Arch. Law, in his *Considerations on the State of the World, &c.* These gentlemen have shewn, that, *cæteris manentibus*, which is in these things always to be previously allowed, the dispensations recorded in the Scriptures have been, as far as we can judge, perfectly suited to the states of the world at the times when these dispensations were made respectively; *i. e.* to the improvement of mankind in knowledge speculative and practical, to their wants, and to their ability to profit in moral accomplishments; so that if we suppose either much more, or much less, light to have been afforded to mankind in a supernatural way (*cæteris manentibus*; and particularly their voluntary powers over their affections and actions, or free-will, in the practical sense, remaining the same), their advancement in moral perfection, in voluntary obedience to and pure love of God, would probably have been less: which suitableness of each revelation to the time when it was made, and to the production of the *maximum* of moral perfection, is an argument for the system of revelation, of the same kind with those for the goodness of God, which are drawn from the mutual fitnesses of the finite and

imperfect parts of the natural world to each other, and to the production of the *maximum*, or greatest possible quantity, of happiness.

PROP. XLIII.—*The Exclusion of all great Degrees of Enthusiasm and Imposture from the Characters of Christ, the Prophets, and Apostles, prove their Divine Authority.*

THAT Christ, the prophets, and apostles, cannot be charged with any great degrees of enthusiasm or imposture, seems allowed by many unbelievers; and is evident from the first view of their discourses and writings, and of history sacred and profane. We might say, that much more is evident. However, for the present, let us only suppose all great degrees of enthusiasm and imposture excluded, and inquire how far their divine mission may be inferred from that supposition.

First, then, If all great degrees of enthusiasm be excluded, Christ, the prophets, and apostles, must know whether or no they were under the influence of the Divine Spirit, so as to prophesy, speak, and interpret languages, which they had never learnt, and work miracles. Indeed, to suppose them not capable of distinguishing these powers in themselves and each other, is to charge them with downright madness.

Secondly, Since then they claimed these powers every where, as the seal of their commission from God; if they had them not, *i. e.* if they had not divine authority, they must be impostors, and endeavour to deceive the world knowingly and deliberately. And this imposture, whether we consider the affront offered to God, or the injury done to mankind, or its duration, its audaciousness, &c. would be the deepest and blackest that has ever appeared in the world. It is therefore excluded by supposition; and consequently, since a less degree will not account for a false claim to a divine authority, we must allow that Christ, the prophets, and apostles, made a true one.

Thirdly, Let it be observed, that though cautious unbelievers do not venture to charge Christ, the prophets, and apostles, either with gross enthusiasm, or abandoned imposture, in express terms; yet they find themselves obliged to insinuate both in all their attacks upon revealed religion: which is, in effect, to acknowledge the truth of the present proposition; for it is the same thing as to acknowledge that both the charge of gross enthusiasm, and that of abandoned imposture, are necessary to support the objections against revealed religion. Now, as neither charge, singly taken, can be maintained, so both together are inconsistent. Gross enthusiasm does not admit that constant caution, and cool dispassionate cunning, which abandoned imposture supposes and requires in order to succeed.

PROP. XLIV.—*The Reception which Christ, his Forerunners, and Followers, with their Doctrines, have met with in all ages, is an Argument of their Divine Authority.*

THIS evidence does, as it were, embrace all the others, and give a particular force to them. For it will be a strong confirmation of all the evidences for the Jewish and Christian religions, if we can shew that the persons to whom they have been offered, have been influenced by them as much as there was reason to expect, admitting them to be true; and far more than could be expected, on supposition that they were false. The most illustrious instance of this, is the victory which the christian miracles and doctrines, with the sufferings of our Saviour, and his followers, gained over the whole powers, first, of the Jewish state, and then of the Roman empire, in the primitive times. For here all ranks and kinds of men, princes, priests, Jewish and heathen philosophers, populace, with all their associated prejudices from custom and education, with all their corrupt passions and lusts, with all the external advantages of learning, power, riches, honour, and, in short, with every thing but truth, endeavoured to suppress the progress that Christ's religion made every day in the world, but were unable to do it. Yet still the evidence was but of a limited nature; it required to be set forth, attested, and explained, by the preacher, and to be attended to, and reflected upon, with some degree of impartiality, by the hearer: and therefore, though the progress of it was quick, and the effect general, yet they were not instantaneous and universal. However, it is very evident, that any fraud, or false pretence, must soon have yielded to so great an opposition so circumstanced.

The efficacy which the christian doctrine then had in reforming the lives of many thousands, is here to be considered as a principal branch of this argument, it being evidently the most difficult of all things to convert men from vicious habits to virtuous ones, as every one may judge from what he feels in himself, as well as from what he sees in others; and whatever does this, cannot, as it seems to me, but come from God. The false religions, and various corruptions of the true, which have from time to time appeared in the world, have been enabled to do this in the imperfect manner in which they have done it, merely, as it seems to me, from that mixture of important truths, and good motives, which they have borrowed from real revelations, Patriarchal, Judaical, and Christian.

In like manner, as the propagation of Christianity, upon its first appearance in the world, evinces its divine original, so does the progress it has since made, and the reception which it meets with at present, amongst the several ranks and orders of men. The detail of this would run out to a great length. It may, however, be of some use just to observe, that, notwithstanding

the great prevalence of infidelity in the present times, it is seldom found to consist with an accurate knowledge of ancient history, sacred and profane, and never with an exalted piety and devotion to God.

And it is as peculiarly for the credit of Christianity, that it should now be supported by the learned, as that it was first propagated by the unlearned; and an incontestable evidence for it, as appears to me, that it has been universally embraced by all eminently pious persons, to whom it has been made known in a proper manner.

The analogous observations may be made upon the reception which the Jewish religion met with both from the Jews themselves, and from the neighbouring nations. It seems impossible for Moses to have delivered the Jews from their oppression in Egypt, and afterwards to have subjected them to his laws, for Joshua to have conquered Canaan, for the religion to have subsisted in the succeeding times of the judges and kings, for the priests and prophets to have maintained their authority, for the people to have returned, after their captivity, with their religion in an uncorrupted state, and to have supported it and themselves against the kings of Syria and Egypt, and the power of the Romans, and to remain at this day a separate people, dispersed all over the world, according to the prophecies, unless the miraculous part of the history of the Old Testament be allowed to be true, as well as the other.

PROP. XLV. — *The Reception which false Religions have met with in the World, are Arguments of the Truth of the Christian.*

I WILL here make a few short remarks,

First, Upon the polytheistical, idolatrous religions of the ancient world.

Secondly, Upon the religious institutions of Zoroaster.

Thirdly, Upon the imposture of Mahomet.

Fourthly, Upon the enthusiastical sects, which have appeared from time to time amongst Christians.

All these seem to have met with such success, as might be expected from the mixture of truth and falsehood in them, compared with the then circumstances of things. They are therefore indirect evidences for the truth of the christian religion, since this has met with such success, as cannot be reconciled to the circumstances of things, unless we suppose it true.

And, first, The ancient pagan religions seem evidently to be the degenerated offspring of the patriarchal revelations; and so far to have been true, as they taught a God, a Providence, a future state, supernatural communications made to particular persons, especially in the infancy of the world, the present corruption of man, and his deviation from a pure and perfect way, the hopes of a pardon, a mediatorial power, the duties of sacrifice,

prayer, and praise, and the virtues of prudence, temperance, justice, and fortitude. They were false, as they mixed and polluted these important truths with numberless fables, superstitions, and impieties. That degree of truth, and moral excellence, which remained in them, was a principal cause of their success, and easy propagation among the people; for their moral sense would direct them to approve and receive what was fit and useful. And, had the people of those times penetrated sufficiently into the powers of the human mind, they might have concluded, that religious truths could not be of human invention. However, as the impressions which the historical and prophetic evidences for the patriarchal revelations had made upon mankind, were not yet obliterated; they believed, upon the authority of tradition, that all important knowledge, especially in sacred matters, was of divine original.

As to the miracles said to be wrought upon certain occasions in pagan nations, we may make these two remarks: First, That the evidence for these is far inferior to that for the Jewish and christian miracles; so that these may be true, though those be false. Secondly, That we are not sufficiently informed of the ways of Providence, to infer that God did not permit, or cause, some miracles to be wrought, even in times and places, where great corruption prevailed. Divine communications and miracles were probably most common soon after the flood, in the infancy of mankind: afterwards, as they advanced towards adult age, these supernatural interpositions grew more rare (unless upon singular occasions, as upon the publication of the law by Moses, and of the gospel by Christ; at which times, many and great miracles succeeded each other at short intervals, in order to command awe, attention, and belief), and it may be, that they ceased in the pagan world for some ages before Christ: or, it may be otherwise; and that, in rare and extraordinary cases, the hand of God appeared in a miraculous manner. Analogy favours the last opinion, as it seems to me; which also appears to be more countenanced by history than the contrary ones; and yet the pretences to miracles amongst the pagans were undoubtedly false, in the general.

I come, in the second place, to consider the religious institutions of Zoroaster. We have not so full and authentic an history of these, as to compare them properly with the Jewish or Christian revelations. If we suppose, that Zoroaster and Hystaspes set up the worship of one God, in a simple manner, teaching and inculcating the practice of virtue at the same time, this religion may be said to have considerable moral evidence in its favour. If, farther, we suppose it to be in part derived, either from the descendants of Abraham by Keturah, called Brachmans from him, or from that knowledge of the true God, which the ten tribes, and the Jews, had then communicated to that part of the world, it will become an evidence for the Jewish religion.

Thirdly, The religion of Mahomet allows and presupposes the truth of the Jewish and Christian. Its rapid propagation was owing chiefly to the mixture of political interests. That part of its doctrines which is good, is manifestly taken from the Scriptures; and this contributed to its success. However, a comparison of Mahometism with Christianity, in the several particulars of each, seems to shew, that whenever a strict examination is made into the history of Mahometism by its professors, the falsehood of it will quickly be made evident to them. It could not stand such a trial as Christianity has, since the revival of learning in these western parts.

It seems easy to apply what has been delivered in the three last paragraphs to the analogous particulars of the religion of Confucius, and of other religions found in the East and West Indies, as far as their histories are sufficiently full and authentic for that purpose.

Lastly, One may make the following remarks, with respect to the several enthusiastic sects, that arise from time to time amongst Christians.

First, That their pretences to miracles and prophecies have, in general, been detected and exposed, after some examination and inquiry; unless the sect has begun to decline from other causes, before a strict examination became necessary.

Secondly, That their pretended miracles were not of that evident kind, nor done in the same open manner, &c. as the Jewish and Christian miracles.

Thirdly, That these pretended miracles have not produced lasting effects upon the minds of men, like the Jewish and Christian. Now, though a religion may succeed for a time without true miracles, yet it seems hard to believe, that any should fail with them.

Fourthly, The success of sects has, in general, been owing to their making greater pretences to purity, and gospel perfection, than established churches, and to their both teaching and practising some necessary duties, which established churches have too much neglected in the corrupted state of Christianity. And in this light they have been true in part, and have done the most important service to the world. Every sect of Christians has magnified some great truth, not above its real value, but above the value which other sects have set upon it; and by this means each important religious truth has had the advantage of being set in a full light by some party or other, though too much neglected by the rest. And the true catholic church and communion of saints unites all these sects, by taking what is right from each, and leaving the errors, falsehoods, and corruptions of each to combat and destroy one another.

And it may be, that mankind will be able in future generations to see, how every other sect, and pretence to revelation, besides those of enthusiastic Christians, in whatever age or country it

has appeared, has been, all other things remaining the same, suited, in the best possible manner, both to particular and general purposes; and that each has prepared the way, in its proper place, for that more complete state predicted in the Scriptures under the titles of *the kingdom of heaven* and of *righteousness, of the New Jerusalem, &c.* Even infidelity, atheism, and scepticism, have their use. The vessels of wrath are still vessels belonging to the Maker and Lord of all things, and answering his infinitely beneficent purposes. *Offences must come, though woe be to those by whom they come!* Each sect, and pretence, and objection, has given, or will give, way in its time. The true and pure religion of Christ alone grows more evident and powerful from every attack that is made upon it, and converts the bitterness and poison of its adversaries into nourishment for itself, and an universal remedy for the pains and sorrows of a miserable, degenerate world.

CHAP. III.

THE RULE OF LIFE.

HAVING delivered, in the two foregoing chapters, the respective evidences for natural and revealed religion, I proceed now to inquire into the Rule of Life enjoined by them. This, it is evident, must be compliance with the will of God. Both natural and revealed religion teach this at first view; which is also the immediate dictate of rational self-interest. It is farther evident, that the love of God, and of our neighbour, with moderation in all selfish enjoyments, must be the will of Him, who is infinitely benevolent, *i. e.* in the popular phrase, infinitely holy, merciful, just, and true, who has sent us into this world to make ourselves and others happy. This we may learn from natural religion, and the Scriptures abound every where with the same precepts. I propose, therefore, in this chapter, to enter into the detail of these precepts, and to apply them to the several particular circumstances of human life, digesting what I have to offer, under the heads of the seven kinds of pleasure and pain, whose history I have given in the foregoing part of this work. But first I will, in the four propositions that follow next, premise an argument in favour of virtue, which ought to have some weight, as it seems to me, even with an atheist or sceptic.

SECT. I.

THE RULE OF LIFE, AS DEDUCIBLE FROM THE PRACTICE AND OPINIONS OF MANKIND.

PROP. XLVI.—*The Practice of Mankind affords a Direction, which, though an imperfect one, may, however, be of some Use in our Inquiry after the Rule of Life.*

THIS follows, First, Because, in all the subordinate arts of life, we always pay a great regard to the common judgment, practice,

and experience of mankind, taken at an average, as one may say. And this is thought to be more particularly requisite for those persons to do, who are ignorant and novices in respect of these arts. Now what is reasonable in the inferior arts, must also be reasonable in the art of arts, that of living happily, of attaining our *summum bonum*, or greatest possible happiness, here and hereafter, if there be an hereafter; which there may be, even consistently with atheism and scepticism. There seems, therefore, a peculiar obligation, from self-interest at least, upon atheists and sceptics, since they must live here upon the same terms as other men, and stand the same chance for an hereafter, to pay some deference to the practice of others, considered as an hint and caution how to secure their own interest.

Secondly, Mankind are evidently endued with a desire of attaining happiness, and avoiding misery; and arrive at a competent knowledge of the means which lead to this end. I have, in the foregoing part of this work, endeavoured to shew how this desire and knowledge are generated. But the fact is certain and obvious, whether that account be satisfactory or no.

Thirdly, Those who admit a benevolent Author of Nature, in any sense of these words, will be inclined to believe that mankind must, in some degree, be fitted to attain happiness; and also, in consequence thereof, attain it in fact. And even atheistical and sceptical persons, when they see how blind fate, or nature, or whatever term else they think fit to use, gives to all animals appetites, instincts, and objects, in general, suited to their well-being, ought, from an argument of induction, to expect something analogous to this in mankind, previously to their inquiry into the fact.

It appears, therefore, that the practice of mankind, taken at an average, may be of some use to us in our investigation of the rule of life; and yet these same considerations shew, that the light thereby afforded can be no more than a very imperfect one. The error, irregularity, and misery, which are every where conspicuous, prove at once that the practice of mankind is no infallible guide.

PROP. XLVII.—*The Opinions of Mankind afford an imperfect Direction in respect of the Rule of Life, which is preferable to that drawn from their Practice.*

THAT the opinions of mankind concerning the means of obtaining happiness are both of real use, and yet an imperfect rule in many respects, will appear, if we apply the reasoning used in the foregoing proposition to them.

That this imperfect rule is, however, preferable to that drawn from the mere practice, follows, inasmuch as the opinions of mankind are, in general, formed after experience, and often upon mature deliberation, when they are free from the violent

impulses of their appetites and passions, and at a more proper and equal distance from the objects under consideration, than can well be at the time of action.

PROP. XLVIII.—*The Rule of Life drawn from the Practice and Opinions of Mankind, taken at an Average, is favourable to the Cause of Virtue.*

I WILL first consider the rule supposed to be taken from the mere practice of mankind.

Now it appears at first sight, that this rule would exclude all eminent degrees both of virtue and vice. A person who should be similar to the whole aggregate of mankind, considered as one great individual, would have some seeds and shoots of every virtue, and every vice, and yet none in an eminent degree: his virtues and vices would only exert themselves, when called forth by strong motives and occasions: in which cases, however, this fictitious person, this type and representative of the whole species, would not fail to shew that he had all kinds of good and bad dispositions, all balancing and restraining one another, unless where extraordinary incidents turn the scale in favour of each particular respectively: so that, if the mere practice of mankind should be thought sufficient to ground a rule upon, we should be directed by this to avoid all great degrees both of virtue and vice, and to keep our appetites and passions in subjection to one another, so as that none should prevail over the rest, unless upon particular extraordinary occasions. And a person formed according to this model would be reckoned a neutral, moderate, prudent man, not much loved or hated by those with whom he conversed; however respected and regarded rather than otherwise. We may also suppose that his life would be much chequered with happiness and misery; and yet, for the most part, be void of all high degrees of either; upon the whole, probably rather happy than miserable. And thus the practice of mankind would, as it appears to me, lead to a low degree both of virtue and happiness, and exclude all that violence and exorbitancy of passion and appetite, which is one chief source and occasion of vice. For almost all kinds of vice are the excesses, and monstrous offsprings, of natural appetites, whereas the virtues are in general of a moderate nature, and lie between the two extremes. That moderation, therefore, which the practice of mankind, taken so as to make the opposite extremes balance each other, directs us to, must, upon the whole, be more favourable to virtue than to vice.

Let us next inquire to what rule of life the opinions of mankind would lead us, or how far the several virtues or vices are generally esteemed to conduce to happiness or misery. Now, as the general practice of mankind excludes all gross vices, so does the general opinion, but in a stronger manner. It does

also exclude all eminent virtues; but then it does this in a weaker manner than the general practice; and, upon the whole, it turns the scale greatly in favour of virtue, and against vice, as means of private happiness; as will immediately appear, if we consider the particular virtues and vices of temperance and intemperance, meekness and anger, beneficence and avarice, gratitude and ingratitude, &c. as opposed to, and put in competition with, each other, in the judgment of mankind. And yet it does not seem by any means, that, according to the general opinion of mankind, the greatest degree of virtue has the fairest prospect for happiness in this world.

But then, with respect to that other world, for which there is at least this presumption of general opinion, we have almost an universal consent, of all ages and nations, that all degrees of virtue and vice will there meet with their proper and proportional reward and punishment. Now an impartial sceptic must either enter the lists, and fairly consider what arguments there are for or against a future state, and reason upon the subject, *i. e.* cease to be a sceptic; or else this general opinion of mankind in favour of a future state must, for the mechanical reasons alleged in the first part of this work, give some degree of determination to him here, as in other cases, where the mind is perfectly *in equilibrio*. For the same reasons, the almost universal consent of mankind in the superior advantages of virtue in a future state, by them supposed, ought to have some weight with such a person, even though he should still remain *in equilibrio*, as to the opinion of a future state, because then it would be as probable as the other side of the question.

And upon the whole, we may make the following conclusions.

1. That a person who should form his life partly upon the practice of mankind, and partly upon their opinions, would incline considerably to the side of virtue.
2. That, if he thought the rule drawn from the opinions of mankind preferable to that drawn from their practice, according to the last proposition, he must incline more to the side of virtue.
3. That, if the future state, which commences at the expiration of this life, be supposed of indefinitely more value than it, and certain, he ought to adhere strictly to virtue, and renounce all vice. And the conclusion will be the same, though there be only a strong, or a moderate probability, or even an equal chance, nay, I might almost say, a bare possibility, of the reality, and great importance, of a future life; since what he would forfeit in this life by a strict adherence to virtue, is confessedly of small importance in common cases.
4. That all great degrees of vice are contrary to the common sense, practice, and experience of mankind.
5. And, therefore, lastly, If a man gives himself up to vicious courses, pretending cool rational scepticism and uncertainty in

religious matters, he must either deceive himself, or endeavour to impose upon others. A person who lay entirely afloat, would, from the susceptibility of infection, allowed by all, and above explained from our frame, suffer himself to be formed by the practices and opinions of mankind at an average, *i. e.* would incline to the side of virtue: and, therefore, a person who inclines the contrary way, must be drawn aside from the neutral point of scepticism by secret prejudices and passions.

It may be objected to the reasoning used in the former part of this proposition, that whatever be the opinions of mankind, their practice at an average is by no means at an equal distance from perfect virtue, and gross vice; but approaches much nearer to the latter extreme; and that this appears both from the observations of the facts, and from the declarations of the Scriptures.

First, then, Let us consider the observation of the facts. And here the objectors will be ready to heap together the many instances of violence, revenge, cruelty, injustice, ingratitude, treachery, want of natural affection, brutal sensuality, anger, envy, moroseness, ambition, avarice, and selfishness, which history and experience, public and private, are able to furnish; and will urge, that a person who should copy after mankind taken at a medium, would be a very sensual, selfish, malevolent, and every way vicious creature. And it must be confessed, nay, I am so far from denying, that I every where suppose, and lay it down as a principle, that there is much corruption and wickedness all over the world. But that the moral evil in the world exceeds the moral good, would be very difficult to prove.

For, first, How shall we make the computation? Who shall sum up for us all the instances of the foregoing and other vices, and weigh them in a just balance against the contrary instances of love to relations, friends, neighbours, strangers, enemies, and the brute creation; of temperance and chastity, generosity, gratitude, compassion, courage, humility, piety, resignation, &c.? The case between the virtues and the vices, *i. e.* between moral good and evil, seems to resemble that between pleasure and pain, or natural good and evil. The instances of pleasure are, in general, more numerous, but less in quantity, than those of pain; and though it is impossible to speak with certainty, because no man can be qualified to make the estimate, yet pleasure seems to prevail upon the whole. In like manner, the instances of benevolence, of some kind or other, though mixed with many imperfections, of a partial self-government, of a superstitious, enthusiastic, idolatrous, or lukewarm piety, one or other, occur in almost all the most familiar circumstances of human life, and intermix themselves with the most common, ordinary thoughts, words, and actions: whereas the instances of sensuality, malevolence, and profaneness, are rarer, as it seems, though often of a more glaring nature.

Secondly, The imperfection of virtue, which I allow, and even

lay down in mankind in general, makes them, in general, apt to magnify the vices of others. Perfect virtue may be supposed to be but just perfectly candid and equitable; and, therefore, imperfect virtue is most probably too censorious, especially since men, by blaming others, hope to exculpate or exalt themselves. And agreeably to this, common experience shews, that bodily infirmities, disappointments, pride, self-indulgence, and vice of all kinds, dispose men to look upon the dark side of every prospect, and to magnify the evils, natural and moral, that are in the world, both in their own thoughts, and in their discourses to others. It is also to be added here, that as our opinions are more in favour of virtue than our practice, so our rule of judging must of consequence much condemn the general practice. This circumstance is very necessary for the moral improvement of the world; but, if overlooked, it may mislead in the present inquiry.

Thirdly, The greater intenseness of the particular pains above the corresponding pleasures in general, and of the particular vices above the opposite virtues as just now mentioned, tends, for most eminent and beneficent final causes in both cases, to affect the imagination and memory with stronger and more lasting impressions, so as to occur more readily to the invention in all inquiries and speculations of this kind.

Fourthly, If we suppose that natural good prevails, upon the whole, in the world, analogy seems to require, that moral good (which is, in general, its cause) should also prevail in like manner. Farther, as we judge that natural good prevails from the general desire of life, the pleasure of recollecting persons, and places, and renewing our acquaintance with them, &c., so the same things seem to determine, that mankind is, upon the whole, rather amiable and respectable, than hateful and contemptible, *i. e.* rather virtuous than vicious.

Lastly, It is to be observed, that, in an accurate way of speaking, virtue and vice are mere relative terms, like great and little. Whence the average of mankind may be considered as a middle point between the positive and negative quantities of virtue and vice, as a neutral situation. And, upon this supposition, we might first shew, that it is man's greatest interest, his *summum bonum*, at least, to be neutral; and afterwards, that he ought to press forward with all possible earnestness towards the infinite perfection of God, though ever at an infinite distance. For, as every finite length is infinitely nearer to nothing, than to a metaphysically infinite one (to make this supposition for argument's sake;) so all finite virtue is infinitely more distant from the infinite perfection of God, than from nothing. And thus, indeed, all our righteousness is *filthy rags*, and all our virtue infinite vice. But this method of considering the present subject is far from opposing the purport of this section.

If we should call all mere self-regards vice, and all regards to God and our neighbour, virtue; which is a very proper language,

and one that would render the terms of this inquiry precise; it seems probable to me, that virtue abounds more, upon the whole, than vice. A view to the good of others, at least near relations, is a general motive to action; and a design to please God, at least not to offend him, is very common in the bulk of mankind, or even the worst. The most ordinary and trivial actions are performed without any explicit view at all, at least any that we remember a few moments after the action, *i. e.* are automatic secondarily; and so cannot be considered as either virtuous or vicious; or, if they be, we must judge of their complexion by that of the more eminent ones.

Secondly, It may be objected, that, according to the Scriptures, mankind are in a lost fallen state; *that they are all gone out of the way, and become corrupt and abominable; that there is none that doth good, &c.* I answer, that these, and such like expressions, seem to refer to a former state of innocence in paradise, to a future kingdom of righteousness, promised in both the Old and New Testament, and to the rule of life laid down there, with the conditions requisite to our admittance into this happy state: and that, in this view of things, the virtue of mankind in general is as deficient as their happiness falls short of the joys of the blessed; agreeably to which, the present life is, in the Scripture, represented as a scene of vanity, labour, and sorrow. And it is a most important and alarming consideration, that the common virtue of mankind will not entitle us to a future reward after death; *that few shall find the straight gate; and that, unless our righteousness exceed that of the Scribes and Pharisees, we can in no wise enter into the kingdom of heaven,* here or hereafter. But then, as, notwithstanding the curse passed upon man, and upon the ground, God is represented in Scripture as *opening his hand, and filling all things living with plenteousness,* as being kind to all, and manifesting his infinite and invisible goodness by visible things, *i. e.* as making natural good to prevail upon the whole, that so we may, on this account, be thankful to him, and love him with all our hearts, as he commands; so the corresponding precept of loving our neighbour as ourselves, seems to infer, that our neighbour is amiable upon the whole. And we may suppose that moral good prevails in general, in a degree proportional to the prevalence of natural good: or however we understand the scripture language on this head, it cannot be contrary to the foregoing reasoning. It must appear from thence, that we ought to be, at least, as good as mankind at a *medium*, in order to obtain the *medium* of happiness; and that, if we have higher views, our road lies towards the infinite perfection of virtue, towards spirituality, benevolence, and piety, and not towards sensuality, selfishness, or malevolence.

PROP. XLIX.—*The Rule of Life drawn from the Practice and Opinions of Mankind, corrects and improves itself perpetually, till at last it determines entirely for Virtue, and excludes all Kinds and Degrees of Vice.*

FOR, since the imperfect rule, drawn in the last proposition, is, at least, so favourable to virtue, as to exclude all great vices, we may conclude that all grossly vicious persons ought to be left out in collecting the rule of life from the practice and opinions of mankind; and that our rule will approach nearer to a perfect one thereby. And as this our second rule, taken from the virtuous and superior orders of the vicious, determines more in favour of virtue than our first, taken indifferently from all the orders both of the virtuous and vicious, so it will engage us to exclude more of the vicious from our future estimate; and so on, till at last we determine entirely in favour of virtue. At least, this is a presumption, which rises up to view, when we consider the subject in the method here proposed. Since it appears from the first general consideration of the practice and opinions of mankind, that grossly vicious persons must be unhappy, it is not reasonable to allow them any weight in determining what is the proper method for attaining the greatest possible happiness. And as the same observation recurs perpetually, with respect to all the orders of the vicious, we shall at last be led to take the most virtuous only, as the proper guides of life.

Grossly vicious persons may also be excluded, from the manifest blindness and infatuation in common affairs, which attends them; and as this extends to the vice of sensuality in particular, so this vice may be farther excluded from that tendency of our natures to spirituality, in our progress through life, which is allowed by all, and explained in the foregoing part of this work upon the principle of association. Malevolence is also excluded, because it is itself misery, and, by parity of reason, benevolence must be a proper recommendation for those, whose example and judgment we would follow in our endeavours after happiness. And it does not appear in this way of proposing these matters, that the ultimate ratio of things admits of any limit to our spirituality or benevolence, provided we suppose, that, at the expiration of this life, a progressive scene of the same kind commences.

The method of reasoning here used bears some resemblance to, and is somewhat illustrated by, the method of approximation practised by mathematicians, in order to determine the roots of equations to any proposed degree of exactness. Farther, as it is common in infinite series for the three or four first terms either to shew what the whole series is, or, at least, that it is infinite; so here the evergrowing and superior excellence of spirituality and benevolence, which the foregoing considerations open to

view, by recurring perpetually, and correcting the immediately precedent determination in every step, may incline one to think, in correspondence to that method of reasoning in series, that spirituality and benevolence ought to be made infinite in the ultimate ratio which they bear to sensuality and selfishness.

But this method of reasoning may also be illustrated, in a more popular way, by applying it to more obvious inquiries. I will give two instances of this, the first in the health of the body natural, the second in the welfare of the body politic.

Suppose, then, that a person entirely ignorant of physic, theoretical and practical, and disposed to treat it as mere guess-work and uncertainty, should, however, be desirous to know, since he must eat, what diet is most conducive to health. The first and most obvious answer will be, the general diet of mankind; because this is the result of general experience, and of the natural appetites, which are in so many other instances fitted to the objects themselves, and to the uses and pleasures, public and private, of human life. And thus the inquirer would be restrained from all gross excesses in the quantity or qualities of his diet. But if he farther observes that the opinions of mankind tend more to moderation in diets than their practice; and that both the practice and opinions of those who appear by other criterions to be the best judges, tend more to moderation than those of mankind at an average; and, lastly, that the sensual and intemperate ought entirely to be excluded from having any share in determining this inquiry; this will lead him to great moderation in diet, or even to abstemiousness.

In like manner let it be asked, what principles of government are most conducive to the public welfare? Are private virtues, or private vices, most to be encouraged? Here indeed the answer drawn from the average of states will not be an exact medium between both, so as to discourage all the virtues, and all the degrees of them, as much as the vices, and their degrees; and *vice versâ*, to encourage both equally; but will, upon the whole, be greatly favourable to virtue. However, since avarice, vain-glory, resentment, luxury, &c. are, in certain respects, even promoted, and the greatest virtues sometimes persecuted, the practice of legislators and magistrates, in enacting and enforcing laws, will not be entirely favourable to virtue. But then, if we take their opinions, especially those of the legislators the most celebrated for wisdom, and leave out barbarous nations, infant states as yet unsettled, and such as approach near to their dissolution, the average from the remainder will give the advantage to virtue more and more perpetually. And it may be remarked of both these instances, that they prove in part the thing to be illustrated by them, being not mere emblems only, but in part the reality itself. For moderation in diet is one principal virtue, and extremely requisite to preserve benevolence in perfection; and health a great ingredient towards happiness. And the public

happiness which arises from the cultivation of private virtues, includes private happiness within itself.

Perhaps it may not displease the reader just to hint, that the same method of reasoning may be made use of in favour of the christian religion. All ages and nations have in general believed some revelation. There must therefore be some true one. But the christian is plainly the religion of the most learned and knowing part of mankind, and is, in general, more earnestly believed, in proportion as men are wiser and better. If we except the Mahometans, the rest of the world are mere savages. But Mahometanism bears testimony to both the Old and New Testament. If the unbeliever will not be determined by this himself, let him at least allow that the more ignorant and unlearned may be directed by it to the true religion. But then they are not to be supposed capable of making objections. Whoever has a capacity for this, has also a capacity to receive the proper answers.

It is evident, however, that observations of this kind, drawn from the common sense and judgment of mankind, cannot carry us to great lengths with precision and certainty. They are very convincing and striking, in respect of the first principles and rudiments; but, if we would descend to minute particulars with accuracy, recourse must be had to the several practical theories of each art.

SECT. II.

THE REGARD DUE TO THE PLEASURES AND PAINS OF SENSATION IN FORMING THE RULE OF LIFE.

PROP. L.—*The Pleasures of Sensation ought not to be made a primary Pursuit.*

IN order to shew this, let us put the extreme case of the primary pursuit of sensible pleasure; and suppose, that a person endeavours to gratify every impulse of his bodily appetites, however contrary such gratification may be to the virtues of temperance and chastity. Now it is evident, that such a one would soon destroy the bodily faculties themselves, thereby rendering the objects of sensible pleasure useless, and also precipitate himself into pain, diseases, and death, those greatest of evils in the opinion of the voluptuous. This is a plain matter of observation, verified every day by the sad examples of loathsome, tortured wretches, that occur which way soever we turn our eyes, in the streets, in private families, in hospitals, in palaces. Whether

the Scriptures give a true account how all this sin and misery were first introduced into the world; also whether our reason be able to reconcile it with the moral attributes of God, or no; still, that positive misery, and the loss even of sensual happiness, are thus inseparably connected with intemperance and lewdness, is an evident fact, that no unbeliever, no atheist, no sceptic, that will open his eyes, can dispute. And it is to be observed, that the real instances do not, cannot come up to the case here put of a man's yielding to every sensual inclination. The most gross and debauched have had some restraints from some other desires or fears, from the quarters of imagination, ambition, &c. It is evident therefore, *à fortiori*, that the mere gratification of our sensual appetites cannot be our primary pursuit, our *summum bonum*, or the rule and end of life. They must be regulated by, and made subservient to, some other part of our natures; else we shall miss even the sensible pleasure, that we might have enjoyed, and shall fall into the opposite pains; which, as has been observed before, are, in general, far greater, and more exquisite, than the sensible pleasures.

That indulgence in sensual gratifications will not afford us our *summum bonum*, may also be inferred from the following arguments; *viz.* that it destroys the mental faculties, the apprehension, memory, imagination, invention; that it exposes men to censure and contempt; that it brings them to penury; that it is absolutely inconsistent with the duties and pleasures of benevolence and piety; and that it is all along attended with the secret reproaches of the moral sense, and the horrors of a guilty mind. Now it is impossible, as will appear from the foregoing history of association, how much soever a man may be devoted to sensual indulgences, entirely to prevent the generation of the several mental affections; but it is in our power, by an inordinate pursuit of the sensible pleasures, to convert the mental affections into sources of pain, and to impair and cut off many of the intellectual pleasures, so as that the balance shall be against us upon the whole. It follows therefore from this utter inconsistency of the sensible pleasures, when made a primary pursuit, with the intellectual ones, that they ought not to be so; but must be subjected to, and regulated by, some more impartial law, than that of mere sensual desire.

The same thing may be concluded, in a more direct way, from the history of association. For the sensible pleasures are the first pleasures of which we are capable, and are the foundation of the intellectual ones, which are formed from them in succession, according to the law of association, as before explained. Now which way soever we turn our view, that which is prior in the order of nature is always less perfect and principal, than that which is posterior, the last of two contiguous states being the end, the first the means subservient to that end, though itself be an end in respect of some foregoing state. The sensible pleasures

therefore cannot be supposed of equal value and dignity with the intellectual, to the generation of which they are made subservient. And we might be led to infer this from the mere analogy of nature, from the numberless parallel instances which daily observation suggests, and without taking into consideration the infinite beneficence of the supreme cause, which yet makes this argument much more satisfactory and convincing.

Nay, one may go farther, and observe, that as many persons are evidently forced from the inordinate pursuit of sensible pleasure by its inconsistency with itself, and with the other parts of our frame, so it seems, that, if human life was continued to an indefinite length, and yet nothing abated from the rigour of those wholesome severities, and penal sufferings, which sensuality brings upon us, more and more individuals would perpetually be advanced thereby to a state of spirituality; and that it would be impossible for any man to persist for ever in sacrificing all to his sensual appetites, in *making his belly his god*, upon such disadvantageous, and painful terms. Intellectual desires, *i. e.* desires in which no particular sensible pleasure is conspicuous, (though they arise from a multiform aggregate of the traces of such) must be formed, as we see they are in fact, in the most luxurious and debauched; and these would at last become sufficient to struggle with and overpower the sensual desires, which would at the same time be weakened by associations with intense pains and sufferings. And this affords us a pleasing glimpse not only of a future state, but also of what may be done there by still greater severities, for those whom the miseries of this life could not free from the slavery to their bodily appetites; at the same time that it is the strongest incentive to us all, to apply ourselves with earnestness and assiduity to the great business and purport of the present life, the transformation of sensuality into spirituality, by associating the sensible pleasures, and their traces, with proper foreign objects, and so forming motives to beneficent actions, and diffusing them over the whole general course of our existence.

Lastly, The inferior value of the sensible pleasures may be deduced from their being of a confined local nature; and injuring or destroying prematurely, *i. e.* before the body in general comes to its period, the particular organs of each, when indulged to excess; whereas the intellectual pleasures affect the whole nervous system, *i. e.* all the sensible parts, and that nearly in an equal manner, on account of the varieties and combinations of sensible local, and of nascent intellectual pleasures, which occur in the formation of the mature intellectual ones; so that though some of them should be indulged to excess, and out of due proportion to the rest, this will be more consistent with the gentle, gradual decay of the mortal body.

We may add, that the duration of mere sensual pleasure is necessarily short; and that, even when free from guilt, it cannot, however, afford any pleasing reflections; whereas one of the

principal tendencies of our natures is, and must be, from the power of association in forming them, to the pleasures of reflection and consciousness. In like manner, the evident use and restriction thereto of one of the principal sensible pleasures to preserve life and health, with all the consequent mental faculties, and executive bodily powers; of the other to continue the species, and to generate and enlarge benevolence; make the subordinate nature of both manifest in an obvious way, and without entering minutely into the history of association: at the same time that these remarks, when further pursued, unite with that history, and are eminent parts of the foregoing argument, taken directly from thence.

Thus it appears, that the pleasures of sensation ought not to be made the primary pursuit of life; but require to be restrained and directed by some foreign regulating power. What that power is, I now come to shew in the next proposition.

PROP. LI.—*The Pursuit of sensible Pleasure ought to regulated by the Precepts of Benevolence, Piety, and the Moral Sense.*

THIS may be proved by shewing, that the regulation of our sensible pleasures, here proposed, will contribute both to their own improvement, and to that of the other parts of our natures.

Now benevolence requires, that the pleasures of sense should be made entirely subservient to the health of the body and mind, that so each person may best fill his place in life, best perform the several relative duties of it, and prolong his days to their utmost period, free from great diseases and infirmities; instances of which have much authority, and a very beneficial influence, in the world. All gratifications therefore, which tend to produce diseases in the body, and disturbances in the mind, are forbidden by benevolence, and the most wholesome diet as to quantity and quality enjoined by it. The rules of piety are to the same purpose, whether they be deduced from our relation to God, as our common father and benefactor, who wills that all his children should use his blessings so as to promote the common good thereby; or from the natural signatures of his will in the immediate pleasures and advantages arising from moderate refreshment, and the manifest inconveniences and injuries caused by excess in quantity or quality; or from his revealed will, by which temperance is commanded, and all intemperance severely threatened. In like manner, the moral sense directs us implicitly to the same moderation and government of our appetites, whether it be derived explicitly from the foregoing rules of piety and benevolence, or from ideas of decency, rational self-interest, the practice of wise and good men, the loathsomeness of diseases, the odiousness and mischiefs of violent passions, &c. It is evident therefore, that all these three guides of life lead to the same end, *viz.* great moderation in sensual enjoyments, though they differ

somewhat in their motives, and the commodiousness of their application as a rule in the particular occurrences of life.

It is evident at the same time, that we are no losers, in respect of the sensible pleasures, by this steady adherence to moderation. Our senses, and bodily faculties, are by these means preserved in their perfection; so as to afford the natural exquisite gratification, and to enable us to perform the several animal functions with ease and pleasure, and to carry us on to old age with all the integrity of these senses and faculties, that is consistent with the necessary decay and dissolution of our earthly body. The same moderation, and health arising from it, inspire men with perpetual serenity, cheerfulness, and good-will, and with gratitude towards God, who *gives us all things richly to enjoy*, and the sensible pleasures in particular, as the means and earnest of far greater, both here and hereafter. Now it is observable in the common intercourses of life, that associated circumstances add greatly to our pleasures. Thus the pleasure of receiving a thing from a friend, of making a friend partaker of it, of sociality and mirth at the time of enjoyment, &c. greatly enhance the gratifications of taste, as in feasts, and public entertainments. Much more than may the pure and exalted pleasures of benevolence and piety, *the eating and drinking to the glory of God*, improve these pleasures.

And as we are no losers, but great gainers, upon the whole, by religious abstemiousness, in respect of the sensible pleasure; so are we much more obviously so, in respect of the sensible pains and sufferings, which the intemperate bring upon themselves. These are of the most exquisite kind, and often of long duration, especially when they give intervals of respite, thus exceeding the inventions of the most cruel tyrants. They impair the bodily and mental faculties, so as to render most other enjoyments imperfect and insipid, dispose to peevishness, passion, and murmuring against Providence, and are attended with the horrors of a guilty mind. It follows therefore, that he who would obtain the *maximum* of the sensible pleasures, even those of taste, must not give himself up to them; but restrain them, and make them subject to benevolence, piety, and the moral sense.

COR. Besides the sensible pains, which excesses bring upon men, there are some which occur in the daily discharge of the functions of life, from fatigue, labour, hardships, &c. Now it follows from the same method of reasoning as that used in the two foregoing propositions, that the proper method of avoiding these pains is not to aim at it directly, but in every thing to be guided by the precepts of benevolence, piety, and the moral sense; and that delicate and effeminate persons endure more from this head of sufferings, than the charitable and devout, who *go about doing good*, at the apparent expense of their ease and quiet.

PROP. LII.—*To deduce practical Rules concerning Diet.*

WHAT that moderation in diet is, which would most contribute to the health of the body and mind, and consequently which duty requires, is difficult to determine in particular cases. The following subordinate rules may, however, afford some assistance in this matter.

First, then, It is necessary to abstain from all such things as the common experience of mankind determines to be unwholesome, either in general, or to the particular persons who make the inquiry. There are indeed some vulgar errors of this kind, that are generally received, and which, by being observed, may a little abridge one's liberty, without use or necessity. However, this is of small moment, in comparison of the dangers arising from the free use of meats and drinks found by the repeated observation of those who have made the trial, to be hurtful, generally or particularly. There still remains, after all these are set aside, a sufficient variety of things-approved as wholesome by the same common experience, to answer all the purposes of life, health, and even sensible pleasure. This rule will be farther explained by those that follow.

Secondly, We ought either totally to abstain from, or, however, to use with great caution and moderation, all foods of high relish, whose tastes and smells are pungent and acrid; all which, though made grateful by custom, are at first disagreeable; all which bear a great affinity in taste, smell, and generical or specific characteristics, to such as are known to be hurtful; which are poisonous during a particular state, previous to coction, or other preparation; which are uncommon, or which have very particular effects upon the functions and secretions. For all these things are signs of active properties in the foods to which they belong, and shew them to be rather proper for medicines, than for common diet; to be bodies which by an extraordinary efficacy may reduce the solids and fluids back to their natural state, when they have deviated from it; and therefore which are very unsuitable to the natural state.

We may consider farther, that strong tastes, smells, &c. are, according to the modern philosophy, marks of great powers of attraction and cohesion in the small component particles of natural bodies. Since therefore it is the manifest design of the descending serieses of arteries in animals to separate the particles of their aliment from each other, also the particles of these particles, &c. that so the smallest particles, or the *minima divisibilia*, meeting in the veins, may unite according to their respective sizes, and mutual actions, *i. e.* to separate what is heterogeneous, and congregate what is homogeneous, a great difficulty and burden must be laid upon the circulation, and upon what is called nature in the body, by all highly agreeable flavours; and, unless a proportional degree of muscular action impels the blood forward,

particles of an undue size must remain undivided, and form obstructions, which may either never be removed, or not till the obstructing particles become putrid; and thus, being dissolved, and mixed with the animal juices, infect them with putrescence.

Still farther, it may be remarked, that the same active particles in foods are probably the sources and recruits of that nervous power, or of some requisite to it, by which animal sensation and motion, and, by consequence, intellectual apprehension and affection, and their effects upon the body, are carried on. Now, it is evident, that affection raised to a certain height, and executive power ready to answer the first call, are a mental disease of the most pernicious tendency. High-relished aliments, which generate it, are therefore carefully to be avoided, on one hand; as a very insipid diet, on the other, seems insufficient to qualify us for performing the requisite functions of life. But there is little danger of erring on this hand, our appetites being but too sensibly gratified with the high relishes. We may add, as nearly allied to these considerations, that by storing our blood, and the solids thence formed, with active properties, we lay up matter for future pains, both bodily and mental, whenever either body or mind become disordered, at the same time that a high diet has, as we see, an evident tendency to disorder both.

This second rule coincides, for the most part, with the first; and may be made use of to extend and confirm it. Those meats and drinks, which are found by experience to be hurtful, have, for the most part, high relishes. We may therefore determine against an aliment of a high flavour from a narrower experience, than against one of a common moderate flavour. And it is very necessary to attend to this criterion, since the best observations upon diet are much perplexed by foreign circumstances.

Thirdly, All liquors, which have undergone vinous fermentation, since they obtain thereby an inflammable, inebriating spirit, have from this inebriating quality, which impairs reason, and adds force to the passions, a mark set upon them, as dangerous not only on this account, but on others, to bodily health, &c. and as either totally to be avoided, or not to be used, except in small quantities, and rarely. The general agreeableness of wines and fermented liquors to the taste, their immediate good effects in languors, dejections, and indigestion, and their exhilarating quality, when taken sparingly, are indeed arguments to shew that there may be a proper use of them. But this seems rather to be that of medicines, or refreshments upon singular occasions, than of daily food.

It may perhaps be, that the changes produced in the earth at the deluge did so alter the nature of vegetable juices, as to render them then first capable of producing an inflammable inebriating spirit by fermentation; and that this alteration in the juices of vegetables had a principal share in shortening the life of man; perhaps of other animals, which last might farther contribute to the first.

So great an event as the deluge may well be supposed to make a great alteration in all the three kingdoms, mineral, vegetable, and animal. We are sure of the first from natural history, and of the last from the Scriptures, which relate the gradual shortening of man's life after the flood, And the account of Noah's drunkenness seems to intimate, that it was something new and unexpected. The connexion of the three kingdoms with each other is also so great, that we may reasonably infer a change in any one, either as a cause, or as an effect, from finding it in the other two. However, the sin of our common parent Noah, and his exposing his nakedness, which also bears some resemblance to the immediate consequence of Adam's transgression, ought to make us particularly upon our guard. At the same time several other passages of Scripture seem fairly to intimate, that there is an allowable use of wine in the intercourses of human life, as where *wine* is said to *make glad the heart of man*, and therefore to be matter of praise; our Saviour's turning water into wine; his blessing it at his last supper, and making it the representative of his blood; and St. Paul's advice to Timothy. But very great caution ought to be used in this point. The inebriating quality of fermented liquors, by disordering the mind, is a strong evidence that they are also hurtful to the body, both because of the intimate connexion between body and mind, and because all the beneficent ends of Providence are answered always by one and the same means, and centre in one and the same point. Whenever therefore we deviate in one respect, we must deviate in all. The abstinence from wine enjoined upon the Nazarites at all times, and upon the priests during their ministration, appears to be a strong intimation of the unsuitableness of wine to those who aim at perfection; who would deviate as little as possible from the divine life.

This third rule coincides remarkably with both the first and second. The ill effects of fermented liquors, when indulged in, are evident from experience; and their high flavours are a principal temptation to an immoderate use of them.

Fourthly, With respect to animal diet, let it be considered, that taking away the lives of animals, in order to convert them into food, does great violence to the principles of benevolence and compassion. This appears from the frequent hard-heartedness and cruelty found amongst those persons whose occupations engage them in destroying animal life, as well as from the uneasiness which others feel in beholding the butchery of animals. It is most evident, in respect of the larger animals, and those with whom mankind have a familiar intercourse, such as oxen, sheep, domestic fowls, &c. so as to distinguish, love, and compassionate individuals. These creatures resemble us greatly in the make of the body in general, and in that of the particular organs of circulation, respiration, digestion, &c.; also in the formation of their intellects, memories, and passions, and in the

signs of distress, fear, pain, and death. They often likewise win our affections by the marks of peculiar sagacity, by their instincts, helplessness, innocence, nascent benevolence, &c. And if there be any glimmering of hope of an hereafter for them, if they should prove to be our brethren and sisters in this higher sense, in immortality as well as mortality, in the permanent principle of our minds, as well as the frail dust of our bodies; if they should be partakers of the same redemption as well as of our fall, and be members of the same mystical body, this would have a particular tendency to increase our tenderness for them. At the same time the present circumstances of things seem to require, that no very great alteration should be made in this matter: we ourselves are under the same law of death, and of becoming food to our fellow-animals; and philosophy has of late discovered such numberless orders of small animals in parts of diet formerly esteemed to be void of life, and such an extension of life into the vegetable kingdom, that we seem under the perpetual necessity, either of destroying the lives of some of the creatures, or of perishing ourselves, and suffering many others to perish. This therefore seems to be no more than an argument to stop us in our career, to make us sparing and tender in this article, and put us upon consulting experience more faithfully and impartially, in order to determine what is most suitable to the purposes of life and health, our compassion being made by the foregoing considerations, in some measure, a balance to our impetuous bodily appetites. At least, abstinence from flesh meats seems left to each person's choice, and not necessary, unless in peculiar circumstances.

The doctrine of the Scriptures on this head appears very agreeable to these dictates of sympathy. For Noah, and we in him, received a permission from God to eat flesh; and that this was no more than a permission, may be concluded from its not being given to Adam, from the shortening of human life after the flood, from the strict command concerning blood, from the Israelites being restrained from animal food for forty years during their purification and institution in religion in the wilderness, from the distinction of animals into clean and unclean, from the burning of part in sacrifice, and sometimes the whole, from the practice of many Jews and Christians particularly eminent for piety, &c. All these may be considered as hints and admonitions to us, as checks and restraints upon unbridled carnal appetites and lusts: at the same time that our Saviour's partaking in meats with all kinds of men, and many express instances and testimonies both in the Old and New Testament, as particularly the command to eat the paschal lamb, and other sacrifices, remove all scruple from those persons who eat with moderation, and in conformity to the rules of piety, benevolence, and the moral sense.

The coincidence of this fourth rule with the first and second appears in the same manner as that of the third with them.

Fifthly, Having laid down these four rules concerning the quality of our aliments, I come next to observe, that the quantity ought scarce ever to be so much as our appetites prompt us to, but, in general, to fall a little short of this. The goodness of this rule is verified by common observation; nay, one may affirm, that small errors in the quality of our diet may be quite rectified by a proper moderation in respect of quantity; whereas a transgression in regard to quantity cannot be compensated by the innocence of the aliment. Such a transgression is, however, more rare, where the quality of the aliment is not improper.

Here it may be asked how it comes to pass, that the appetites should, in some instances, be the best guides to us both in respect of quality and quantity, and in most so to the brute creation, and yet, in other instances, be so greatly apt to mislead us, to hurry us on to pain, diseases, and death, and these not rare and singular ones, but the most frequent and ordinary that occur. Almost every man is tempted by fruits, by wines, natural and artificial savours, and high relishes, &c. to transgress either in quantity or quality. Now to this we may answer, that in young children the appetites deviate very seldom and very little, from what is most conducive to the body; and that they would probably deviate less, were children conducted better, were not their tastes and appetites perverted and corrupted by customs and practices derived from our corruptions, or our ignorance. This may, at first sight, seem harsh, in respect of them; but it is at the same time a strong instance and argument, amongst many others, of the intimate connexion and sympathy, that unite us all to each other, of our being members of the same mystical body, and of the great system of the world's being a system of benevolence; and thus it concurs to establish the fundamental position of these papers. However, these perversions and corruptions, from whatever cause they arise, seldom grow to a great height, till such time as children arrive at years of discretion in a certain degree, till they get some ideas of fitness, decency, obedience to superiors, and to God, conscience, &c. Now at first, indeed, the child is mere body, as it were; and therefore it is not at all incongruous to suppose, that he may be directed by mere bodily appetites and instincts. But, when the mental faculties are generated, he then becomes a compound of body and mind; and consequently it would be incongruous to suppose him directed in any thing that affects both body and mind, as diet plainly does, by mere bodily appetites. On the contrary, his rule ought now to be a compound of bodily and mental instincts, inclinations, admonitions, &c. directing, influencing, and assisting one another. Let this be so, and the child or man will very seldom deviate from what is most conducive to health and happiness of all kinds. And it is to be observed, that the bodily pains and sufferings which follow from yielding to mere bodily appetites, in opposition to mental conviction, are one principal means by

which the authority and influence of conscience are established with respect to other branches of desire. And when a person, from these or other motives, reverses his own steps in respect of the pleasures of taste, the irregularity and inordinateness of the bodily appetites decline by the same degrees, as they grew excessive through unlawful gratification. So that, after a person has governed himself, for a considerable time, with strictness, from a sense of duty, he will find little difficulty afterwards. The natural appetites will themselves become the proper substitutes of benevolence, piety, and the moral sense, and direct a man what and how much is requisite.

All this reasoning is confirmed by the observation before made on brutes. They continue mere body, as it were, to the last; and therefore their bodily appetites scarce ever mislead them. And the evil influences which our corrupt practices and customs have upon them, is a farther argument for the relation we all bear to each other. In like manner, all the evil mutual influences in animals, with all their original deviations, are marks and evidences of a fallen and degenerate state, however difficult this may be to be accounted for. They are therefore evidences also of the truth of the Scriptures, which not only declare this our degeneracy, and give a general idea of the means by which it was introduced, but also publish the glorious tidings of our redemption from it.

Sixthly, Since the circumstances of the world are such, as that it is almost impossible for those who do not retire from it, to avoid errors both in the quantity and quality of their diet, there seems a necessity for fasting upon certain occasions. This is a compendious method of reversing our own wrong steps, of preventing the ill effects of excess upon the body and mind, breaking ill habits of this sort at once, and bringing us back, by hasty motions, to the highest degree of self-government, to which imperfect creatures in this world of temptations can attain. It is therefore a duty, which implies and presupposes the present imperfection and degeneracy of our natures. And yet this duty, harsh as it seems, is probably productive even of sensible pleasures in most instances; since, under due restrictions, it appears to be extremely conducive to health and long life, as well as to the regulation of our passions. It may be true indeed, that constant abstemiousness would be preferable, in these respects, to what is called common moderation, practised upon ordinary occasions, and rectified by fasting upon particular ones. But the due degree of abstemiousness is scarce practicable for a constancy, as I observed just now, to those whose duty engages them to converse freely with the world. Let me add here, that fasting will have much more efficacy towards reducing us to a right course of action, when it is accompanied with such religious exercises, as the practice of good men has joined with it, prayer, self-examination, and works of charity.

Seventhly, Where a person has been so happily educated, as scarce to have transgressed the bounds of strict moderation, either in eating or drinking, and with respect both to quantity and quality, or where he has corrected and brought back himself by due severity, sufficiently continued, it is better to pay a regard to the foregoing and such like precepts, only to a certain degree, upon occasions of importance, and without scrupulosity and rigour; and, in the small instantaneous occurrences of life, to be directed by the natural appetites, agreeably to the original intention of the Author of nature. For anxiety, solicitude, and scrupulosity, are greatly prejudicial to the health both of the body and mind, turn us from our natural and equitable judgment of things, augment selfishness, and disqualify for the practice of the highest duties, good-will to men, and complacency and delight in God. The scripture precept is *to eat and drink to the glory of God*, not with a solicitude about ourselves.

PROP. LIII.—*To deduce practical Rules concerning the Commerce between the Sexes.*

THAT benevolence, love, esteem, and the other sympathetic affections, give the chief value, and highest perfection, to the sensible pleasures between the sexes, is sufficiently evident to serious and considerate persons. It appears also, that these pleasures were intended by Providence, as a principal means, whereby we might be enabled to transfer our affection and concern from ourselves to others, and learn first in the single instance of the beloved person, afterwards in those of the common offspring, to sympathize in the pleasures and pains of our neighbours, and to love them as ourselves. It follows therefore, that if this great source of benevolence be corrupted, or perverted to other purposes, the social affections thereon depending will be perverted likewise, and degenerate into selfishness or malevolence. Let us inquire in what manner the strong inclinations of the sexes to each other may be best conducted, so as most to contribute to public and private happiness, so as to obtain the *maximum* of it, both from this quarter, and from the other parts of our nature, which are necessarily connected with it.

First, then, It is evident, that unrestrained promiscuous concubinage would produce the greatest evils, public and private. By being unrestrained, it would destroy the health and the propagation of mankind; by being promiscuous, it would become ineffectual to promote love, and the tender affections, either between the persons themselves, or towards their offspring, and also raise endless jealousies and quarrels amongst mankind. There has never perhaps been any nation in the world, where this entire licentiousness has been allowed; the mischiefs which evidently follow from all great degrees of it, having always laid

mankind under some restraints, and produced some imperfect regulations at least, and some approaches towards marriage. However, the misery and desolation of the barbarous nations of Africa and America, in whom the violence of passion, and the degeneracy of nature, have almost obliterated the faint traces of the patriarchal religion; and the many evils, public and private, which attend all unlawful commerce between the sexes in the more civilized countries; are abundantly sufficient to evince what is affirmed. The shameful, loathsome, and often fatal disease, which peculiarly attends the vice of lewdness, may be considered as a most unquestionable evidence of the divine will. This disease, with all its consequences, would soon cease amongst mankind, could they be brought under the restraints of lawful marriage; but must ever continue, whilst licentiousness continues. And it is perhaps to this disease that we owe the present tolerable state of things. It may be, that, without this check, the licentiousness, which has always been observed to follow improvements in arts and politeness, and to attend upon bodies politic in their declension, and which the corruption of the Christian religion in some, and the disbelief of it in others, have, in a manner, authorized, would have brought on utter dissoluteness in this western part of the world, such as would have been inconsistent with the very existence of regular government. Nay, it may be, that this will still be the case, and that we are hastening to our period, through the great wickedness of the world in this respect particularly, though our lives, as a body politic, be somewhat prolonged, by this correction.

Secondly. Promiscuous concubinage being thus evidently excluded, it comes next to be inquired, whether the gospel rule of confining one man to one woman during life, except in the case of the woman's adultery, be calculated to produce the greatest possible good, public and private. And here we must own ourselves utterly unable to form any exact judgment. It is impossible to determine, by any computation, which of all the ways, in which marriage has been or may be regulated, is most conducive to happiness upon the whole; this would be too wide a field, and where also we could have no fixed points to guide us; just as, in the matter of civil government, it is impossible for us to determine, what particular form, monarchy, aristocracy, &c. or what mixture of these, is most accommodated to human nature, and these circumstances of things. Here therefore we seem particularly to want a revelation to direct us; and therefore are under a particular obligation to abide by its award. Now revealed religion commands us, in the case of government, to obey those powers that are actually established, of whatever kind they be, leaving that to the children of this world to dispute; and in respect of marriage, gives a permission to enter into this state to those who find it requisite, and also a farther permission to divorce an adulteress, and marry another woman;

but at the same time enjoins the strictest purity in our thoughts, words, and actions; and that not only in all such as respect other persons besides the husband and wife, but in every thing that has a tendency to heighten carnal desire. Now, though it does not appear, that mankind ever did or ever would make so strict a rule for themselves; yet this rule, when made, approves itself to our judgments. The strictest purity and watchfulness over ourselves are necessary, in order to make marriage of any kind (which we see by the last article to be itself necessary) happy, and productive of private pleasure and comfort, and of public good, by the united labours of the married pair for themselves, their offspring, and their relatives. In the present imperfect state of things, the forbidding to divorce an adulteress might seem a harsh commandment, above the frailty of our natures, as requiring the most entire love and affection, where there are returns of the greatest contempt and aversion, and the greatest violation of what are called just rights and properties. Now, though the gospel requires perfection of us ultimately, *i. e.* the most entire love in return for the most bitter hatred, and an absolute disregard of all property both for ourselves, and for those whom we make our substitutes after death; yet it makes allowance for human frailty in this eminent instance; leaving it, however, to every man, who is arrived at a sufficient degree of perfection, to walk thereby.

That a greater liberty of divorcing would be less suited to produce good, public and private, upon the whole, appears probable, because no definite rule could be given in respect of other offences, they all admitting of various degrees; and because the prospect of divorcing, or being divorced, would often increase breaches, at the same time that frequent divorces would have the worst consequences in respect of children, and even approach to promiscuous concubinage; whereas the indissolubility of the marriage bond, with the affection to the common offspring, often produce in both parties the christian virtues of forbearance, and forgiveness to each other. It is not at all improbable, that wicked casuists, who have explained away so many express gospel precepts, would, by the influence of princes and great men, have rendered marriage almost of no effect, by increasing the liberty of divorcing.

Thirdly, The great sinfulness of adultery, fornication, and impurity of every kind, appears not only from the manifest and great evils and miseries of various sorts attending them, the shame, intemperance, jealousies, murders, &c. and from the strictness of the gospel precepts, and the practices of the first Christians in this respect; but also because the great sin of idolatry is represented by adultery and fornication in the prophetic writings; and because the most heavy judgments are denounced against these last sins in those writings, when understood both in figurative and literal senses. And indeed, as the

idoltrous rites of the heathens were generally accompanied with abominable lewdness, so these vicious pleasures may be considered as one of the grossest kinds of idolatry, as withdrawing our affections from the true object, and fixing them on a mere animal pleasure, on one from the first and lowest class, and as worshipping the heathen deities of Bacchus and Venus. It is true indeed, that the pursuits of this kind are seldom from the alone view of bodily pleasure, the very nature of our bodies not suffering this, since the law of the body must transfer bodily pleasures upon foreign objects, so as to form intellectual pleasures. But then the intellectual pleasure accompanying these pursuits is always a vicious one, generally that of a vain mischievous ambition, which occasions the greatest confusion, havock, and distress, in families, and indeed in the whole race of mankind.

Fourthly, It follows from the shame attending these pleasures, the organs, their functions, &c. in all ages and nations, the account of the origin of this shame in the third chapter of Genesis, the directions concerning the uncleanness of men and women given in the Jewish law, the rite of circumcision, the pains of child-birth, with the account of their origin in the third chapter of Genesis, the strictness required in the Jewish priests, the abstinence required in others upon sacred occasions, the miraculous conception of Christ, his expressions concerning marrying, and giving in marriage, at the times of the flood, and last judgment, his and St. Paul's recommendation of celibacy, the honourable mention of virginity in the Revelation, &c. that these pleasures are to be considered as one of the marks of our present fallen degenerate state. The mortality of the present body, introduced by Adam's sin, would of course require some such method of propagation as now subsists, though nothing of this kind had taken place before the fall; and therefore it may be, that nothing did, or something greatly different from the present method. And one may deduce from hence, as well as from the parallel observations concerning abstinence in diet, and fasting, (for the similar nature, and reciprocal influence, of the sensible pleasures justifies our inferences here, made either way,) also from the sicknesses and infirmities of human life, and particularly from those of women, that great moderation, and frequent abstinence, are requisite. Nay, it even appears, that in many circumstances marriage itself is not to be approved; but rather that men and women, who are advanced to or past the meridian of life, who have a call to offices of religion, charity, &c. who labour under certain hereditary distempers, have relations and dependents that are necessitous, &c. should endeavour to subdue the body by prayer and fasting. However, great care ought here to be taken not to lay a snare before any one.

If we admit the doctrine of this last paragraph, *viz.* that these pleasures are only permitted, and that they are marks of our

fallen state, we may perhaps be enabled thereby to cast some light upon the Scripture history of the Patriarchs and Jews. We Christians who live in the more adult ages of mankind, have stricter precepts, and are obliged to higher degrees of spirituality, as we approach nearer to the spiritual kingdom of Christ; and yet some permissions are suitable to our state. No wonder, then, that larger permissions were requisite in the gross, corporeal, infant state of mankind, considered as one individual tending ever from carnality to spirituality, in a manner analogous to that of each person. However, these were only permissions to the Jews and Patriarchs, not commands. It may perhaps be, that while polygamy subsisted according to permission, the number of women might be greater than that of men. This is indeed mere hypothesis; but such things deserve to be examined, as soon as proper principles are discovered, upon which to proceed. The proportional number of men destroyed by wars in ancient times, appears to be much greater than it is now.

Here it may be asked, If it be requisite in certain persons not to marry at all, and in every one to be abstinent, how can it be said that this rule of life gives the *maximum* of those pleasures? Now, with respect to those who never marry, at the same time devoting themselves really and earnestly to God, to attend upon him without distraction, it may be observed, that they enjoy the peculiar privilege of being exempted from many of the great cares and sorrows of this life; and that the prophetic blessing of the barren's having more children than she which hath an husband, is eminently applicable to them. They that marry, must have sorrow in the flesh; and if those who are under the necessity of marrying, because they burn, humble themselves agreeably to this experience of their own weakness, they will find marriage to be a proper clew to lead them through the difficulties and miseries of this life to a better state. But if a person, who is likewise humble, can humbly hope, upon a fair examination, that he is not under this necessity, there is no occasion that he should take this burden upon him. The benevolent and devout affections, though wanting one source, will, upon the whole, grow faster from other causes; and if he makes all with whom he has any intercourses, all to whom his desires, prayers, and endeavours, can extend, his spiritual children; still with all humility, and diffidence of himself, their spiritual ultimate happiness, through the infinite mercy of God, will be a fund of joy far superior to any that is, and must be, tinctured with the defilements of this world, as that of natural parents cannot but be. As to these, *i. e.* the persons that marry, it is probable that they approach to the *maximum* of the sensible pleasures much more than the dissolute; and if, in any case, they do, for the sake of religion, forego any part of what is permitted, it cannot be doubted, but this will be repaid with ample interest by spiritual pleasures. But this subject is of too nice and difficult a nature

to be farther pursued. Let those who need particular information apply to God for it; and especially let them pray, that they may join Christian prudence with Christian purity and holiness.

It may also be asked here, if marriage be only permitted, and celibacy preferable in the Christian sense of things, what becomes of the propagation and increase of mankind, which seem to have a necessary connexion with the greatest public good? I answer, that this kind of cares is far above us, and therefore foreign to our proper business; whereas the precept, or admonition rather to those who can receive it, is plain, and stands upon the authority of the Christian revelation itself, and of the other natural signatures of the divine will before-mentioned. I answer also, that this world is a ruined world; that it must be destroyed by fire, as Sodom was, perhaps on account of our great corruption in this respect; so that its perfection in this state of things is impossible, and therefore no end for us, though its correction and melioration be, as far as we have opportunity; that this admonition cannot be received by all; and therefore that the few, by whom alone it can be received, may contribute more to the increase of mankind by their promoting virtue, and restraining vice, than any posterity of theirs could do; and lastly, that, if it could be observed by all, we should all be near to Christian perfection, *i. e.* to the glorious kingdom of Christ, and the new state of things. Observations of the same kind may be made upon all the other gospel precepts. If these be kept in their utmost purity by a few only, they seem to promote even temporal happiness upon the whole; and this appears to be the truth of the case, the real fact, since no directions or exhortations can extend to and prevail with more than a few, in comparison of the bulk of mankind, however good and earnest they may be. If all could be influenced at once, it would be still infinitely preferable, because this would be *life from the dead*, and *the kingdom of righteousness*. But this seems impossible. We need not therefore fear any intermediate degree. The more Christian purity and perfection prevail, the better must it be on all real accounts, whatever becomes of trade, arts, grandeur, &c.

Lastly, I cannot dismiss this subject without making some remarks upon education. The desires between the sexes are far more violent than any others; the final cause of which is by writers very justly said to be, that men and women may be compelled, as it were, to undertake the necessary cares and labours, that attend the married pair, in providing for themselves and their offspring. But there is reason to believe from other parallel cases, that these desires are not originally much disproportionate to the end, and that, if due care was taken, they would not arise in youth much before the proper time to set about this end, before the bodies of the sexes were mature, able to endure labour and fatigue, and the woman to undergo child-birth, with its

consequences, of nursing the infant, &c. and their minds ripe for the cares and foresight required in family affairs. Something of this kind would probably happen, whatever care the parents took of the bodies and minds of their children, on account of our fallen degenerate state, our state of trial, which appears in all our other bodily appetites, and intellectual desires. But the violence and unseasonableness of these passions are so manifest in the generality of young persons, that one cannot but conclude the general education of youth to be grossly erroneous and perverted. And this will appear very evident in fact upon examination. The diet of children and young persons is not sufficiently plain and sparing; which would at the same time lay a better foundation for health and freedom from diseases, and put some check upon these passions. They are brought up in effeminacy, and neglect of bodily labour, which would prepare both body and mind for care and sorrow, and keep down carnal desire. The due culture of the mind, especially in respect of religion, is almost universally neglected; so that they are unfit for business, left exposed to temptations through idleness and want of employment, and are destitute of the chief armour, that of religious motives, whereby to oppose temptation. Lastly, the conversation which they hear, and the books which they read, lewd heathen poets, modern plays, romances, &c. are so corrupt in this respect, that it is matter of astonishment, how a parent, who has any degree of seriousness (I will not say religion) himself, or concern for his child, can avoid seeing the immediate destructive consequences, or think that any considerations, relating to this world, can be a balance to these.

PROP. LIV.—*To deduce practical Rules concerning the Hardships, Pains, and Uneasinesses, that occur in the daily Inter-courses of Life.*

I HAVE already observed in general, Prop. LI. Cor. that a regard to the precepts of benevolence, piety, and the moral sense, affords us the best prospect for avoiding and lessening these. I will now exemplify and apply this doctrine more particularly.

First, then, It is evident that luxury, self-indulgence, and an indolent aversion to perform the duties of a man's station, do not only bring on gross bodily diseases; but also previously to this, are often apt to lead men into such a degree of solicitude, anxiety, and fearfulness, in minute affairs, as to make them inflict upon themselves greater torments, than the most cruel tyrant could invent. The complaints, which are usually styled nervous, are peculiarly apt to infest this class of persons; and I need not say to those, who either have themselves experienced them, or attended to them in others, of how grievous a nature they are. Now, though something is to be allowed here to natural con-

stitution, and hereditary tendencies, also to the great injuries sometimes done to the nervous system by profuse evacuations, and violent distempers, in consequence whereof it may be proper and necessary in certain cases to administer such medicines as are suitable to the particular symptoms and temporary exigencies; yet there seems to be no way so probable of getting out of this self-tormenting state, this labyrinth of error and anxiety, as by prayer and resignation to God, by charity, and taking upon one's self the cares and fears of others according to our rank and station in life, easing our own burden thereby, and by constant, laborious, bodily exercise, such particularly as occurs in the faithful discharge of duty, with great moderation in the sensible pleasures. Could the unhappy persons of this sort be prevailed upon to enter on such a course with courage and steadiness, notwithstanding the pains, difficulties, and uneasinesses, which would attend it at first, all would generally begin to clear up even in respect of this world, so as that they would regain some tolerable degrees of health, serenity, and even cheerfulness.

Secondly, Human life is in so imperfect and disorderly a state, on account of the fall, that it is impossible to avoid all excesses, and hardships from heat, cold, hunger, accidents, &c. But then these may be rendered harmless and easy to a great degree, by accustoming the body to them; which the constant and faithful discharge of duty by each person in particular does, in respect of those excesses and hardships that are most likely to befall *him*.

Thirdly, External injuries fall much to the share of the imprudent. Now prudence is a virtue, *i. e.* a dictate of the moral sense, and a command from God; and imprudence, agreeably hereto, the manifest offspring of some vicious passion or other, for the most part.

Fourthly, Bodily pains are often inflicted by men, either in the way of public authority, or of private resentment and malice. But it is very evident, that the benevolent must fare better in this respect, than the malevolent and mischievous.

Fifthly, Whatever evils befall a man, religion, and the belief of a happy futurity, enable him to support himself under them much better than he could otherwise do. The true Christian not only ought, but is also able, for the most part, to *rejoice in tribulation*. And this is the genuine, ultimate, and indeed only perfect solution of all difficulties relating to the pleasures and pains, both sensible and intellectual. For, though it be certain, that a benevolent and pious man has the fairest prospect for obtaining sensible pleasure, and avoiding sensible pain, in general, and upon a fair balance; also that the more wicked any one is, the less pleasure, and more pain, must he expect; yet still it will often happen, that a person is obliged, from a sense of duty, from benevolence, adherence to true religion, the dictates of conscience, or a gospel precept, to forego pleasures, or endure pains, where there is no probability that a recompence will be made during

this life ; and sometimes it is required of a man even to seal his testimony with his blood. Now in these cases, rational self-interest has nothing left, which can satisfy its demands, besides the hope and expectation of a happy futurity ; but the present pleasure, which these afford, is some earnest of the thing hoped and expected ; it is also, in certain cases, so great, as to overpower, and almost annihilate, the opposite pains.

Here let it be observed, that as this frail corruptible body must at last return to its original dust, and lose its power of conveying pleasure to us, which it does gradually for a long time before death from mere old age ; so it is natural to expect that the *maximum* of its pleasures should not always be attained, even by that which is the genuine rule of life. For death is a mark of our present fallen state ; and therefore we may have this farther mark also, that the true rule, which, in a paradisiacal state, would have carried every thing in its order to perfection, will now do it only in the general ; shewing us, first, by its being very general, that it is the true rule ; and secondly, by its not being universal, that we have deviated from our original make.

It may not be amiss to add a few words here concerning sleep. The analogy taken from the foregoing rules teaches that we ought not to indulge in this to the utmost, but to break it off a little before the natural inclination thereto totally expires. And this position is remarkably confirmed both by the many advantages to body and mind, which result from rising early ; and by the scripture precepts concerning *watching* ; which, as appears to me, ought to be taken as well in their strictly literal sense upon proper occasions, as in their more distant and figurative one.

SECT. III.

OF THE REGARD DUE TO THE PLEASURES AND PAINS OF IMAGINATION IN FORMING THE RULE OF LIFE.

PROP. LV.—*The Pleasures of Imagination ought not to be made a primary Pursuit.*

FOR, first, It does not appear that those who devote themselves to the study of the polite arts, or of science, or to any other pleasure of mere imagination, as their chief end and pursuit, attain to a greater degree of happiness than the rest of the world. The frequent repetition of these pleasures cloy, as in other cases ; and though the whole circle of them is so

extensive, as that it might, in some measure, obviate this objection; yet the human fancy is too narrow to take in this whole circle, and the greatest virtuosos do, in fact, seldom apply themselves to more than one or two considerable branches. — The ways in which the pleasures of beauty are usually generated, and transferred upon the several objects, are often opposite to, and inconsistent with, one another; so as to mix deformity with beauty, and to occasion an unpleasing discordancy of opinion, not only in different persons, but even in the same. This is evident from the foregoing history of these pleasures, and of their derivation from arbitrary and accidental associations, as well as from the observation of the fact in real life. And it is not uncommon to see men, after a long and immoderate pursuit of one class of beauty, natural or artificial, deviate into such by-paths and singularities, as that the objects excite pain rather than pleasure; their limits for excellence and perfection being narrow, and their rules absurd; and all that falls short of these, being condemned by them, as deformed and monstrous.—Eminent votaries of this kind are generally remarkable for ignorance and imprudence in common necessary affairs; and thus they are exposed to much ridicule and contempt, as well as to other great inconveniences.—The same persons are peculiarly liable to vanity, self-conceit, censoriousness, moroseness, jealousy, and envy; which surely are very uneasy companions in a man's own breast, as well as the occasions of many insults and harms from abroad.—And I think I may add, that scepticism in religious matters is also a frequent attendant here; which, if it could be supposed free from danger as to futurity, is at least very uncomfortable as to the present. For as the extravagant encomiums bestowed upon works of taste and genius beget a more than ordinary degree of self-conceit in the virtuoso; so this self-conceit, this superiority which he fancies he has over the rest of the world in one branch of knowledge, is by himself often supposed to extend to the rest, in which yet it is probable that he is uncommonly ignorant through want of application; and thus he becomes either dogmatical or sceptical; the first of which qualities, though seemingly opposite to the last, is, in reality, nearly related to it. And, as the sympathetic and theopathic affections are peculiarly necessary for understanding matters of a religious nature aright, no kind or degree of learning being sufficient for this purpose without these, if the pursuit of literature, or science, be so strong, as to stifle and suppress the growth of these, or to distort them, religion, which cannot be reconciled to such a temper, will probably be treated as incomprehensible, absurd, uncertain, or incredible.—However, it is difficult to represent justly, in any of the respects here mentioned, what is the genuine consequence of the mere pursuit of the pleasures of imagination, their votaries being also, for the most part, extremely overrun with the gross vice of ambition, as was just now observed. But then this does

not invalidate any of the foregoing objections, as will be seen when we come to consider that vice in the next Section.

Secondly, It is evident, that the pleasures of imagination were not intended for our primary pursuit, because they are, in general, the first of our intellectual pleasures, which are generated from the sensible ones by association, come to their height early in life, and decline in old age. There are indeed some few persons, who continue devoted to them during life; but there are also some, who remain sensualists to the last; which singularities are, however, in neither case, arguments of the design of Providence, that it should be so. And, in general, we may reason here, as we did above, in deducing the inferior value of the sensible pleasures from their being the lowest class. The pleasures of imagination are the next remove above the sensible ones, and have, in their proper place and degree, a great efficacy in improving and perfecting our natures. They are to men in the early part of their adult age, what playthings are to children; they teach them a love for regularity, exactness, truth, simplicity; they lead them to the knowledge of many important truths relating to themselves, the external world, and its Author; they habituate to invent, and reason by analogy and induction; and when the social, moral, and religious affections begin to be generated in us, we may make a much quicker progress towards the perfection of our natures by having a due stock, and no more than a due stock, of knowledge in natural and artificial things, of a relish for natural and artificial beauty. It deserves particular notice here, that the language used in respect of the ideas, pleasures, and pains of imagination, is applicable to those of the moral sense with a peculiar fitness and significancy; as, *vice versâ*, the proper language of the moral sense does, in many cases, add great beauty to poetry, oratory, &c. when used catachrestically. And we may observe in general, that as the pleasures of imagination are manifestly intended to generate and augment the higher orders, particularly those of sympathy, theopathy, and the moral sense; so these last may be made to improve and perfect those, as I shall now endeavour to shew under the proposition that follows.

PROP. LVI.—*The Pursuit of the Pleasures of Imagination ought to be regulated by the Precepts of Benevolence, Piety, and the Moral Sense.*

FOR, first, Those parts of the arts and sciences which bring glory to God, and advantage to mankind, which inspire devotion, and instruct us how to be useful to others, abound with more and greater beauties, than such as are profane, mischievous, unprofitable, or minute. Thus the study of the Scriptures, of natural history, and natural philosophy, of the frame of the human mind, &c. when undertaken and pursued with benevolent and pious intentions, lead to more elegant problems, and

surprising discoveries than any study intended for mere private amusement.

Secondly, It may be considered as a reason for this, that since this world is a system of benevolence, and consequently its Author the object of unbounded love and adoration, benevolence and piety are the only true guides in our inquiries into it, the only keys which will unlock the mysteries of nature, and clews which lead through her labyrinths. Of this all branches of natural history and natural philosophy, afford abundant instances; and the same thing may be said of civil history, when illustrated and cleared by the Scriptures, so as to open to view the successive dispensations of God to mankind; but it has been more particularly taken notice of in the frame of the human body, and in the symptoms and tendencies of distempers. In all these matters let the inquirer take it for granted previously, that every thing is right, and the best that it can be, *cæteris manentibus*; i. e. let him, with a pious confidence, seek for benevolent purposes; and he will be always directed to the right road, and, after a due continuance in it, attain to some new and valuable truth; whereas every other principle and motive of examination, being foreign to the great plan upon which the universe is constructed, must lead into endless mazes, errors, and perplexities.

Thirdly, It may be considered as a farther reason of the same thing, that benevolence and piety, and by consequence, their offspring, the moral sense, are the only things which can give a genuine and permanent lustre to the truths that are discovered. A man with the most perfect comprehension that his faculties will allow, of that infinite profusion of good which overflows the whole creation, and of all the fountains and conduits of it, and yet having no share of the original source from whence all these were derived, having no pittance or ray of the inexhaustible benevolence of the great Creator, no love for that boundless ocean of love, or sense of duty to him, would be no more happy, than an accomptant is rich by reckoning up millions, or a miser by possessing them.

Fourthly, It may be remarked, that the pleasures of imagination point to devotion in a particular manner by their unlimited nature. For all beauty, both natural and artificial, begins to fade and languish after a short acquaintance with it: novelty is a never-failing requisite: we look down, with indifference and contempt, upon what we comprehend easily; and are ever aiming at, and pursuing, such objects as are but just within the compass of our present faculties. What is it now that we ought to learn from this dissatisfaction to look behind us, and tendency to press forward; from this endless grasping after infinity? Is it not, that the Infinite Author of all things has so formed our faculties, that nothing less than himself can be an adequate object for them? That it is in vain to hope for full and lasting satisfaction from any thing finite, however great and glorious, since it will

itself teach us to conceive and desire something still more so? That as nothing can give us more than a transitory delight, if its relation to God be excluded, so every thing, when considered as the production of his infinite wisdom and goodness, will gratify our utmost expectations, since we may, in this view, see that every thing has infinite uses and excellences? There is not an atom perhaps in the whole universe, which does not abound with millions of worlds; and, conversely, this great system of the sun, planets, and fixed stars, may be no more than a single constituent particle of some body of an immense relative magnitude, &c. In like manner, there is not a moment of time so small, but it may include millions of ages in the estimation of some beings; and, conversely, the largest cycle which human art is able to invent, may be no more than the twinkling of an eye in that of others, &c. The infinite divisibility and extent of space and time admit of such infinities upon infinities, ascending and descending, as make the imagination giddy, when it attempts to survey them. But, however this be, we may be sure, that the true system of things is infinitely more transcendent in greatness and goodness, than any description or conception of ours can make it; and that the voice of nature is an universal chorus of joy and transport, in which the least and vilest, according to common estimation, bear a proper part, as well as those whose present superiority over them appears indefinitely great, and may bear an equal one in the true and ultimate ratio of things. And thus the consideration of God gives a relish and lustre to speculations, which are otherwise dry and unsatisfactory, or which perhaps would confound and terrify. Thus we may learn to rejoice in every thing we see, in the blessings past, present, and future; which we receive either in our own persons, or in those of others; to become partakers of the divine nature, loving and lovely, holy and happy.

PROP. LVII.—*To deduce practical Rules concerning the Elegancies and Amusements of Life.*

By the elegancies of life I mean the artificial beauties of houses, gardens, furniture, dress, &c. which are so much studied in high life. There is in these, as in all other things, a certain middle point, which coincides with our duty, and our happiness; whilst all great deviations from it incur the censure of viciousness, or, at least, of unsuitableness and absurdity. But it is not easy to determine this point exactly, in the several circumstances of each particular person. I will here set down the principal reasons against an excess on each hand, leaving it to every person to judge for himself how far they hold in his own particular circumstances.

We may then urge against the immoderate pursuit of the elegancies of life;

First, That vanity, ostentation, and the unlawful pleasures of

property, of calling things our own, are almost inseparable from the pursuit of these elegancies, and often engross all to themselves.

Secondly, That the profusion of expense requisite here is inconsistent with the charity due to those, that are afflicted in mind, body, and estate.

Thirdly, That the beauties of nature are far superior to all artificial ones, *Solomon in all his glory not being arrayed like a lily of the field*; that they are open to every one, and therefore rather restrain than feed the desire of property; and that they lead to humility, devotion, and the study of the ways of Providence. We ought therefore much rather to apply ourselves to the contemplation of natural than of artificial beauty.

Fourthly, Even the beauties of *nature* are much chequered with irregularities and deformities, this world being only the ruins of a paradisiacal one. We must not therefore expect entire order and perfection in it, till we have passed through the gate of death, and are arrived at our second paradisiacal state, till the heavens and earth, and all things in them, be made anew. How much less then can we hope for perfection in the works of human art! And yet, if we seriously apply ourselves to these, we shall be very apt to flatter ourselves with such false hopes, and to forget *that* heavenly country, the desire and expectation of whose glories and beauties can alone carry us through the present wilderness with any degree of comfort and joy.

But then, on the contrary, that some attention may lawfully, and even ought to be paid to artificial beauty, will appear from the following reasons.

First, Convenience and utility are certainly lawful ends; nay, we are even sent hither to promote these publicly and privately. But these coincide, for the most part, with, and are promoted by, simplicity, neatness, regularity, and justness of proportion, *i. e.* with some of the sources of artificial beauty; though not with all; such as grandeur, profuse variety, accumulation of natural beauties and lustres, and sumptuousness.

Secondly, The study of artificial beauty draws us off from the gross sensual pleasures; refines and spiritualizes our desires; and, when duly limited, teaches us to transfer and apply our ideas of simplicity, uniformity, and justness of proportion, to the heart and affections.

Thirdly, It is necessary for us in this degenerate state, and world of temptations, to be occupied in innocent pursuits, lest we fall into such as are mischievous and sinful. It is therefore, in its proper place and degree, as great charity to mankind to employ the poor in improving and ornamenting external things, rewarding them generously and prudently for their labours, as to give alms; and as useful to the rich to be employed in contriving and conducting such designs at certain times, as to read, meditate, or pray, at others. Our natures are too feeble to be always

strained to the pitch of an active devotion or charity, so that we must be content at some intervals to take up with engagements that are merely innocent, sitting loose to them, and pursuing them without eagerness and intention of mind. However, let it be well observed, that there are very few upon whom this third reason for the pursuit of artificial beauty need be inculcated; and that I presume not at all to interfere with those holy persons, who find themselves able to devote all their talents, their whole time, fortunes, bodily and mental abilities, &c. to the great Author of all, in a direct and immediate manner.

Now these, and such like reasons, for and against the pursuit of the elegancies of life, hold in various degrees according to the several circumstances of particular persons; and it will not be difficult for those who sit loose to the world, and its vanities, to balance them against one another in each case, so as to approach nearly to that *medium* wherein our duty and happiness coincide.

The practice of playing at games of chance and skill is one of the principal amusements of life; and it may be thought hard to condemn it as absolutely unlawful, since there are particular cases of persons infirm in body or mind, where it seems requisite to draw them out of themselves, by a variety of ideas and ends in view, which gently engage the attention. But this reason takes place in very few instances. The general motives to play are avarice, joined with a fraudulent intention, explicit or implicit, ostentation of skill, and spleen through the want of some serious, useful occupation. And as this practice arises from such corrupt sources, so it has a tendency to increase them; and indeed may be considered as an express method of begetting and inculcating self-interest, ill-will, envy, &c. For by gaming a man learns to pursue his own interest solely and explicitly, and to rejoice at the loss of others, as his own gain; grieve at their gain, as his own loss; thus entirely reversing the order established by Providence for social creatures, in which the advantage of one meets in the same point as the advantage of another, and their disadvantage likewise. Let the loss of time, health, fortune, reputation, serenity of temper, &c. be considered also.

PROP. LVIII.—*To deduce practical Rules concerning Mirth, Wit, and Humour.*

HERE it is necessary,

First, To avoid all such mirth, wit, and humour, as has any mixture of profaneness in it, *i. e.* all such as lessens our reverence to God, and religious subjects: aggrieves our neighbour, or excites corrupt and impure inclinations in ourselves. Since then it appears from the history of wit and humour, given in the foregoing part of this work, that the greatest part of what passes under these names, and that which strikes us most, has a sinful tendency, it is necessary to be extremely moderate and cautious

in our mirth, and in our attention to, and endeavours after, wit and humour.

Secondly, Let us suppose the mirth to be innocent, and kept within due bounds; still the frequent returns of it beget a levity and dissipation of mind, that are by no means consistent with that seriousness and watchfulness which are required in Christians, surrounded with temptations, and yet aiming at purity and perfection; in strangers and pilgrims, who ought to have the uncertain time of their departure hence always in view. We may add, that wit and humour, by arising, for the most part, from fictitious contrasts and coincidences, disqualify the mind for the pursuit after truth, and attending to the useful practical relations of things, as has already been observed in the history of them; and that the state of the brain which accompanies mirth cannot subsist long, or return frequently, without injuring it; but must, from the very frame of our natures, end at last in the opposite state of sorrow, dejection, and horror.

Thirdly, There is, for the most part, great vain-glory and ostentation in all attempts after wit and humour. Men of wit seek to be admired and caressed by others for the poignancy, delicacy, brilliancy, of their sayings, hints, and repartees; and are perpetually racking their inventions from this desire of applause. Now, as so sinful a motive must defile all that proceeds from it, so the straining our faculties to an unnatural pitch is inconsistent with that ease and equality in conversation, which our social nature, and a mutual desire to please, and be pleased require.

Fourthly, A due attention being previously paid to the foregoing and such like cautions, it seems not only allowable, but even requisite, to endeavour at a state of perpetual cheerfulness, and to allow ourselves to be amused and diverted by the modest, innocent pleasantries of our friends and acquaintance, contributing also ourselves thereto, as far as is easy and natural to us. This temper of mind flows from benevolence and sociality, and in its turn begets them; it relieves the mind, and qualifies us for the discharge of serious and afflicting duties, when the order of Providence lays them upon us; is a mark of uprightness and indifference to the world, this infantine gaiety of heart being most observable in those who look upon all that the world offers as mere toys and amusements; and it helps to correct, in ourselves and others, many little follies and absurdities, which, though they scarce deserve a severer chastisement, yet ought not to be overlooked entirely.

PROP. LIX.—*To deduce practical Rules concerning the Pursuit of the polite Arts; and particularly of Music, Painting, and Poetry.*

I WILL here enumerate the principal ways in which the three sister arts of music, painting, and poetry, contribute either to

corrupt or improve our minds; as it will thence appear in what manner, and to what degree, they are allowable, or even commendable, and in what cases to be condemned as the vanities and sinful pleasures of the world, abjured by all sincere Christians.

First, then, It is evident, that most kinds of music, painting, and poetry, have close connexions with vice, particularly with the vices of intemperance and lewdness; that they represent them in gay, pleasing colours, or, at least, take off from the abhorrence due to them; that they cannot be enjoyed without *evil communications*, and concurrence in the pagan show and pomp of the world; and that they introduce a frame of mind, quite opposite to that of devotion, and earnest concern for our own and other's future welfare. This is evident of public diversions, collections of pictures, academies for painting, statuary, &c. ancient heathen poetry, modern poetry of most kinds, plays, romances, &c. If there be any who doubt of this, it must be from the want of a duly serious frame of mind.

Secondly, A person cannot acquire any great skill in these arts, either as a critic, or a master of them, without a great consumption of time: they are very apt to excite vanity, self-conceit, and mutual flatteries, in their votaries; and, in many cases, the expense of fortunes is too considerable to be reconciled to the charity and beneficence due to the indigent.

Thirdly, All these arts are capable of being devoted to the immediate service of God and religion in an eminent manner; and, when so devoted, they not only improve and exalt the mind, but are themselves improved and exalted to a much higher degree, than when employed upon profane subjects; the dignity and importance of the ideas and scenes drawn from religion adding a peculiar force and lustre thereto. And, upon the whole, it will follow, that the polite arts are scarce to be allowed, except when consecrated to religious purposes; but that here their cultivation may be made an excellent means of awakening and alarming our affections, and transferring them upon their true objects.

PROP. LX.—*To deduce practical Rules concerning the Pursuit of Science.*

By the pursuit of science I here mean the investigation of such truths as offer themselves in the study of the several branches of knowledge enumerated in the first part of this work; philology, mathematics, logic, history, civil and natural, natural philosophy, and theology, or divine philosophy. Now here we may observe,

First, That though the pursuit of truth be an entertainment and employment suitable to our rational natures, and a duty to Him who is the *fountain of all knowledge and truth*, yet we must make frequent intervals and interruptions; else the study of

science, without a view to God and our duty, and from a vain desire of applause, will get possession of our hearts, engross them wholly, and by taking deeper root than the pursuit of vain amusements, become in the end a much more dangerous and obstinate evil than that. Nothing can easily exceed the vain glory, self-conceit, arrogance, emulation, and envy, that are found in the eminent professors of the sciences, mathematics, natural philosophy, and even divinity itself. Temperance in these studies is therefore evidently required, both in order to check the rise of such ill passions, and to give room for the cultivation of other essential parts of our natures. It is with these pleasures as with the sensible ones; our appetites must not be made the measure of our indulgences; but we ought to refer all to a higher rule.

Secondly, When the pursuit of truth is directed by this higher rule, and entered upon with a view to the glory of God, and the good of mankind, there is no employment more worthy of our natures, or more conducive to their purification and perfection. These are the *wise*, who in the *time of the end shall understand*, and make an *increase of knowledge*; who, by studying and comparing together, the word and works of God, shall be enabled to illustrate and explain both; and who, *by turning many to righteousness, shall themselves shine as the stars for ever and ever*.

But we are not to confine this blessing to those who are called *learned men*, in the usual sense of this word. Devotion, charity, prayer, have a wonderful influence upon those who read the Scriptures, and contemplate the works of creation, with a practical intention; and enable persons otherwise illiterate, not only to see and feel the important truths therein manifested, for their own private purposes, but to preach and inculcate them upon others with singular efficacy and success.

PROP. LXI.—*To deduce practical Rules concerning the Ignorance, Difficulties, and Perplexities, in which we find ourselves involved.*

THESE are pains, which ought to be referred to the head of imagination, as above noted; and which therefore require to be considered here. But it must also be observed, that self-interest has no small share in increasing these pains; our ignorance and perplexity occasioning the most exquisite uneasiness to us in those instances, where our future happiness and misery are at stake. Thus, in the difficulties which attend our inquiries into the origin of evil, free-will, the nature of our future existence, the degree and duration of future punishment, and the moral attributes of God, our uneasiness arises not only from the darkness which surrounds these subjects, and the jarring of our conclusions, but from the great importance of these conclusions. The following practical rules deserve our attention.

First, To avoid all wrangling and contention, all bitterness and

ensoriousness, in speaking or writing upon these subjects. This is a rule which ought to extend to all debates and inquiries upon every subject; but it is more peculiarly requisite to be attended to in difficult ones of a religious nature; inasmuch as these ill dispositions of mind are most unsuitable to religion, and yet most apt to arise in abstruse and high speculations; also as they increase the pains considered in this proposition by being of a nature nearly related to them, *i. e.* by being attended with a nearly related state of the brain.

Secondly, We ought to lay it down as certain, that this perplexity and uneasiness commenced with the fall, with the eating of the fruit of the tree of the knowledge of good and evil; and that it can never be entirely removed till our readmission to paradise, and to the tree whose leaves are for *the healing of the nations*. We must expect therefore, that, though humble and pious inquiries will always be attended with some success and illumination, still much darkness and ignorance will remain. And the expectation of this will contribute to make us easy under it.

Thirdly, The Scriptures give us reason to hope, that this, as well as the rest of our evils, will be removed in a future state. We may therefore, if we labour to secure our happiness in a future state, enjoy, as it were by anticipation, this important part of it, that we shall then *see God and live, see him, though he be invisible, see him as he is, and know as we are known*.

Lastly, Of whatever kind or degree our perplexity be, an implicit confidence in the infinite power, knowledge, and goodness of God, which are manifested, both in his word and works, in so great a variety of ways, is a certain refuge. If our ideas of the divine attributes be sufficiently strong and practical, their greatness and gloriousness, and the joy arising from them, will overpower any gloominess or dissatisfaction, which a narrow and partial view of things may excite in us.

SECT. IV.

OF THE REGARD DUE TO THE PLEASURES OF HONOUR, AND THE PAINS OF SHAME, IN FORMING THE RULE OF LIFE.

PROP. LXII.—*The pleasures of Honour ought not to be made a primary Pursuit.*

THIS may appear from the following considerations.

First, Because an eager desire of, and endeavour after, the

pleasures of honour, has a manifest tendency to disappoint itself. The merit of actions, *i. e.* that property of them for which they are extolled, and the agents loved and esteemed, is, that they proceed from benevolence, or some religious or moral consideration; whereas, if the desire of praise be only in part the motive, we rather censure than commend. But, if praise be supposed the greatest good, the desire of it will prevail above the other desires, and the person will by degrees be led on to vanity, self-conceit, and pride, vices that are most contemptible in the sight of all. *For whosoever exalteth himself, shall be abased; and he that humbleth himself, shall be exalted.*

Secondly, What shall be the matter of the encomiums, if praise be the supreme good of the species? What is there, to which all can attain, and which all shall agree to commend and value? Not external advantages, such as riches, beauty, strength, &c. These are neither in the power of all, nor universally commended. Not great talents, wit, sagacity, memory, invention. These, though more the subject of encomiums, yet fall to the lot of very few only. In short, virtue alone is both universally esteemed, and in the power of all, who are sufficiently desirous to attain it. But virtue cannot consist with the pursuit of praise, much less with its being made a primary pursuit. It follows therefore, that it ought not to be made such.

Thirdly, If it be said, that those who enjoy great external advantages, or are blest with happy talents, may perhaps pursue praise with success; I answer, that the numberless competitions and superiorities of others, follies and infirmities of a man's self, mistakes and jealousies of those from whom he expects praise, make this quite impossible in general. Nay, it is evident from the very nature of praise, which supposes something extraordinary in the thing praised, that it cannot be the lot of many. So that he who pursues it, must either have a very good opinion of himself, which is a dangerous circumstance in a seeker of praise, or allow that there are many chances against him.

Fourthly, If we recollect the history of these pleasures delivered above, we shall see, that though children are pleased with encomiums upon any advantageous circumstances, that relate to them, yet this wears off by degrees; and, as we advance in life, we learn more and more to confine our pleasures of this kind to things in our power, (according to the common acceptation of these words), and to virtue. In like manner, the judicious part of mankind, *i. e.* those whose praise is most valued, give it not except to virtue. Here, then, again, is a most manifest subserviency of these pleasures to virtue. They not only tell us, that they are not our primary pursuit, or ultimate end, but also shew us what is.

Fifthly, The early rise of these pleasures, and their declension in old age, for the most part, are arguments to the same purpose, and may be illustrated by the similar observations made on the

pleasures of sensation and imagination, being not so obvious here as there.

Sixthly, There is something extremely absurd and ridiculous in supposing a person to be perpetually feasting his own mind with, and dwelling upon, the praises that already are, or which he hopes will hereafter be, given to him. And yet, unless a man does this, which besides would evidently incapacitate him for deserving or obtaining praise, how can he fill up a thousandth part of his time with the pleasures of ambition?

Seventhly, Men that are much commended, presently think themselves above the level of the rest of the world; and it is evident, that praise from inferiors wants much of that high relish, which ambitious men expect, or even that it disgusts. It is even uneasy and painful to a man to hear himself commended, though he may think it his due, by a person that is not qualified to judge. And, in this view of things, a truly philosophic and religious mind sees presently, that all the praises of all mankind are very trivial and insipid.

Eighthly, As the desire of praise carries us perpetually from less to larger circles of applauders, at greater distances of time and place, so it necessarily inspires us with an eager hope of a future life; and this hope alone is a considerable presumption in favour of the thing hoped for. Now it will appear from numberless arguments, some of which are mentioned in these papers, that every evidence for a future life is also an evidence in favour of virtue, and of its superior excellence as the end of life; and *vice versá*. The pleasures of ambition lead therefore, in this way also, from themselves, since they lead to those of virtue. Let it be considered farther, that all reflections upon a future life, the new scenes which will be unfolded there, and the discovery which will then be made of *the secrets of all hearts*, must cast a great damp upon every ambition, but a virtuous one; and beget great diffidence even in those, who have the best testimony from their consciences.

PROP. LXIII.—*The Pleasures of Honour may be obtained in their greatest Degree, and highest Perfection, by paying a strict Regard to the Precepts of Benevolence, Piety, and the moral Sense.*

THIS appears, in part, from what has been delivered under the last proposition; but it may be farther confirmed by the following remarks.

First, Benevolence, piety, and the moral sense, engage men to obtain all such qualifications, and to perform all such actions, as are truly honourable. They preserve them also from that ostentation in respect both of these and other things, which would render them ridiculous and contemptible. Indeed honour is affixed by the bulk of mankind, after some experience of men

and things, chiefly to acts of generosity, compassion, public spirit, &c. *i. e.* to acts of benevolence, and the encomiums bestowed upon such acts are one of the principal sources of the moral sense. The *maximum* of honour must therefore coincide with benevolence, and the moral sense, and consequently with piety also, which is closely connected with them.

It may be objected here, that acts of direct piety are not, in general, honourable in this profane world; but, on the contrary, that they expose to the charges of enthusiasm, superstition, and folly; and this not only from the grossly vicious, but, in some cases, even from the bulk of mankind. And it must be allowed, that some deductions ought to be made on this account; but then let it be considered, that it is impossible to obtain the applauses both of the good and the bad; that, as those of the last scarce afford pleasure to any, so their censure need not be feared; and that such persons as are truly devout, as regard God in all their actions, and men only in subordination to him, are not affected by the contempt and reproaches of the world; but, on the contrary, *rejoice when men revile them, and speak all manner of evil against them falsely for the sake of Christ.* Let it be observed farther, that humility is the principal of all the qualifications which recommend men to the world; and that it is difficult, or even impossible, to attain this great virtue without piety, without a high veneration for the infinite majesty of God, and a deep sense of our own nothingness and vileness in his sight; so that, in an indirect way, piety may be said to contribute eminently to obtain the good opinion of the world.

Secondly, It is plain from the above delivered history of honour, as paid to external advantages, to bodily, intellectual, and moral accomplishments, that happiness of some kind or other, accruing to a man's self, or to the world by his means, is the source of all honour, immediately, or mediately. He therefore who is most happy in himself, and most the cause of happiness to others, must in the end, from the very law of our natures, have the greatest quantity of honourable associations transferred upon him. But we have already shewn in part, and shall shew completely in the progress of this chapter, that benevolence, piety, and the moral sense, are the only true, lasting foundations of private happiness; and that the public happiness arises from them, cannot be doubted by any one. The benevolent, pious, and conscientious person must therefore, when duly known, and rightly understood, obtain all the honour which men, good or bad, can bestow; and, as the honour from the first is alone valuable, so he may expect to receive it early, as an immediate reward and support to his present virtues, and an incitement to a daily improvement in them.

Thirdly, For the same reason that we desire honour, esteem, and approbation, from men, and particularly from the wise and good; we must desire them from superior good beings, and,

above all, from God, the highest and best. Or, if we do not desire this, it must arise from such an inattention to the real and most important of all relations, as cannot consist with true happiness. Now a regard to benevolence, piety, and the moral sense, is, by the confession of all, the sole foundation for obtaining this greatest of honours, the approbation of God. We cannot indeed enjoy this in perfection, whilst separated from the invisible world by this fleshly tabernacle; but the testimony of a good conscience gives us some foretaste and anticipation of it. How vain and insipid, in respect of this *eternal weight of glory*, are all the encomiums which all mankind could bestow!

PROP. LXIV.—*To deduce practical Observations on the Nature of Humility, and the Methods of attaining it.*

HERE we may observe,

First, That humility cannot require any man to think worse of himself than according to truth and impartiality: this would be to set the virtues at variance with each other, and to found one of the most excellent of them, humility, in the base vice of falsehood.

Secondly, True humility consists therefore in having right and just notions of our own accomplishments and defects, of our own virtues and vices. For we ought not to descend lower than this by the foregoing paragraph; and to ascend higher, would evidently be pride, as well as falsehood.

Thirdly, It follows, notwithstanding this definition of humility, and even from it, that humble men, especially in the beginning of a religious course, ought to be much occupied in considering and impressing upon themselves their own misery, imperfection, and sinfulness, excluding, as much as possible, all thoughts, and trains of thought, of a contrary nature; also in attending to the perfections of others, and rejecting the consideration of their imperfections. For since all thoughts which please are apt to recur frequently, and their contraries to be kept out of sight, from the very frame of the mind, as appears from Prop. XXII. Cor. III. and other places of the first part of this work, it cannot but be, that all men in their natural state must be proud; they must, by dwelling upon their own perfections, and the imperfections of others, magnify these; by keeping out of view the contraries, diminish them, *i. e.* they must form too high opinions of themselves, and too low ones of others, which is pride: and they cannot arrive at just and true opinions of themselves and others, which is humility, but by reversing the former steps, and impressing upon themselves their own imperfection and vileness, and the perfections of others, by express acts of volition.

Fourthly, A truly humble man will avoid comparing himself with others; and when such comparisons do arise in the mind, or are forced upon it, he will not think himself better than

others. I do not mean, that those who are eminent for knowledge or virtue, should not see and own their superiority, in these respects, over persons evidently ignorant and illiterate, or avowedly vicious. This cannot be avoided; but then this superiority does not minister any food to pride, and a vain complacency in a man's own excellencies. Nor do I mean, that good men may not both humbly hope that they themselves are within the terms of salvation, and also fear that the bulk of mankind are not; the first being a support to their infant virtue, and a comfort allowed by God in their passage through this wilderness; the last a great security against infection from a wicked world. I only affirm, that every person, who is duly aware of his own ignorance, as to the secret causes of merit and demerit in himself and others, will first find himself incapable of judging between individuals; and then, if he has duly studied his own imperfections, according to the last paragraph, he will not be apt to presume in his own favour.

Fifthly, It is an inseparable property of humility, not to seek the applauses of the world; but to acquiesce in the respect paid by it, however disproportionate this may be to the merit of the action under consideration. For the contrary behaviour must produce endless inquietude, resentment, envy, and self-conceit.

Sixthly, It is, in like manner, inseparable from true humility, to take shame to ourselves where we have deserved it, to acquiesce under it where we think we have not, and always to suspect our own judgment in the last case. There is no way so short and efficacious as this to mortify that pride, and overweening opinion of ourselves, which is the result of our frame in this degenerate state. Nay, we ought even to rejoice when we are meanly esteemed, and despised, as having then an opportunity offered of imitating Him who was *meek and lowly in heart*, and of *finding rest to our souls* thereby.

Seventhly, It may conduce to eradicate that tendency which every man has to think himself a nonpareil, in some respect or other, to consider natural productions, flowers, fruits, gems, &c. It would be very absurd to affirm of one of these, that it was a nonpareil in its kind, because it is endued with great beauty and lustre; much less therefore ought we to fancy this of that degree of beauty, parts, virtue, which happens to be our lot, and which is certainly magnified beyond the truth in our own eyes, from the interest which we have in ourselves.

Eighthly, There is scarce a more effectual method of curbing ostentation and self-conceit, than frequently to impose upon one's self a voluntary silence, and not to attempt to speak, unless where a plain reason requires it. Voluntary silence is, in respect of ostentation and self-conceit, what fasting is, in respect of luxury and self-indulgence. All persons, who speak much, and with pleasure, intend to engage the attention, and gain the applause, of the audience; and have a high opinion of their own

talents. And if this daily, I may say hourly, source and effect of vain-glory was cut off, we might with much greater facility get the victory over the rest. When a person has, by this means, reduced himself to a proper indifference to the opinions of the world, he may by degrees abate of the rigour of his silence, and speak naturally and easily, as occasion offers, without any explicit motive; just as when fasting, and other severities, have brought our appetites within due bounds, we may be directed by them in the choice and quantity of common wholesome foods.

Ninthly, The doctrine of philosophical free-will is the cause and support of much pride and self-conceit; and this so much the more, as it is a doctrine not only allowed, but even insisted upon and required, and made essential to the distinction between virtue and vice. Hence men are commanded, as it were, to set a value upon their own actions, by esteeming them their own in the highest sense of the words, and taking the merit of them to themselves. For philosophical free-will supposes, that God has given to each man a sphere of action, in which he does not interpose; but leaves man to act entirely from himself, independently of his Creator; and as, upon this foundation, the assertors of philosophical free-will ascribe all the demerit of actions to men, so they are obliged to allow men to take the merit of good actions to themselves, *i. e.* to be proud and self-conceited. This is the plain consequence of the doctrine of philosophical free-will. How far this objection against it over-balances the objections brought against the opposite doctrine of mechanism, I do not here consider. But it was necessary, in treating of the methods of attaining true humility, to shew in what relation the doctrine of free-will stood to this subject.

But we are not to suppose, that every man who maintains philosophical free-will, does also claim the merit of his good actions to himself. The Scriptures are so full and explicit in ascribing all that is good to God, and the heart of a good man concurs so readily with them, that he will rather expose himself to any perplexity of understanding, than to the charge of so great an impiety. Hence it is, that we see, in the writings of many good men, philosophical free-will asserted, on one hand; and merit disclaimed, on the other; in both cases, with a view to avoid consequences apparently impious; though it be impossible to reconcile these doctrines to each other. However, this subjection of the understanding to the moral principle is a noble instance of humility, and rectitude of heart.

As the assertors of philosophical free-will are not necessarily proud, so the assertors of the doctrine of mechanism are much less necessarily humble. For, however they may, in theory, ascribe all to God, yet the associations of life beget the idea and opinion of *self* again and again, refer actions to this self, and connect a variety of applauses and complacences with these actions. Nay, men may be proud of those actions, which they

directly and explicitly ascribe to God, *i. e.* proud that they are instruments in the hand of God for the performing such actions. Thus the Pharisee, in our Saviour's parable, though he thanked God that he was no extortioner, &c. yet boasted of this, and made it a foundation for despising the publican. However, the frequent recollection, that all our actions proceed from God; that we have nothing which we did not receive from him; that there can be no reason in ourselves why he should select one rather than another for an instrument of his glory in this world, &c. and the application of these important truths to the various real circumstances of our lives; must greatly accelerate our progress to humility and self-annihilation. And, when men are far advanced in this state, they may enjoy quiet and comfort, notwithstanding their past sins and frailties; for they approach to the paradisiacal state, in which our first parents, though naked, were not ashamed. But the greatest caution is requisite here, lest by a fresh obedience we come to know evil as well as good again, and by desiring to be gods, to be independent, make the return of shame, punishment, and mystical death, necessary for our re-admission to the tree of life.

Tenthly, It will greatly recommend humility to us, to consider how much misery a disposition to glory in our superiority over others may hereafter occasion. Let it be observed, therefore, that every finite perfection, how great soever, is at an infinitely greater distance from the infinite perfection of God, than from nothing; so that every finite being may have, and probably has, infinitely more superiors than inferiors. But the same disposition which makes him glory over his inferiors, must make him envy his superiors: he will therefore have, from this his disposition, infinitely more cause to grieve than to rejoice. And it appears from this way of considering things, that nothing could enable us to bear the lustre of the invisible world, were it opened to our view, but humility, self-annihilation, and the love of God, and of his creatures, in and through him.

Eleventhly, If we may be allowed to suppose all God's creatures ultimately and indefinitely happy, according to the third supposition made above for explaining the infinite goodness of God, this would unite the profoundest humility with the highest gratification of our desires after honour. For this makes all God's creatures equal in the eye of their Creator; and therefore, as it obliges us to call the vilest worm our sister, so it transfers upon us the glory of the brightest archangel; we are all equally made *to inherit all things*, are all equally *heirs of God, and co-heirs with Christ*.

SECT. V.

THE REGARD DUE TO THE PLEASURES AND PAINS OF SELF-INTEREST IN FORMING THE RULE OF LIFE.

PROP. LXV.—*The Pleasures of Self-interest ought not to be made a primary Pursuit.*

SELF-INTEREST is of three kinds, as has been already explained; *viz.*

First, Gross self-interest, or the pursuit of the means for obtaining the pleasures of sensation, imagination, and ambition.

Secondly, Refined self-interest, or the pursuit of the means for obtaining the pleasures of sympathy, theopathy, and the moral sense.

Thirdly, Rational self-interest, or the pursuit of such things, as are believed to be the means for obtaining our greatest possible happiness, at the same time that we are ignorant, or do not consider, from what particular species of pleasure this our greatest possible happiness will arise.

Now it is my design, under this proposition, to shew, that none of these three kinds of self-interest ought to be cherished and indulged as the law of our natures, and the end of life; and that even rational self-interest is allowable, only when it tends to restrain other pursuits that are more erroneous, and destructive of our true happiness.

I begin with the arguments against gross self-interest.

First, then, We ought not to pursue the means for obtaining the pleasures of sensation, imagination, and ambition, primarily, because these pleasures themselves ought not to be made primary pursuits, as has been shewn in the three last sections. The means borrow all their lustre from the ends by association; and, if the original lustre of the ends be not sufficient to justify our making them a primary pursuit, the borrowed one of the means cannot. In like manner, if the original lustre be a false light, an *ignis fatuus*, that misleads and seduces us, the borrowed one must mislead and seduce also. And indeed, though we sometimes rest in the means for obtaining the pleasures of sensation, imagination, and ambition, and desire riches, possessions of other kinds, power, privileges, accomplishments bodily and mental, for their own sakes, as it were; yet, for the most part, they introduce an explicit regard to these exploded pleasures; and consequently must increase the corruption, and false cravings, of our minds; and, if they did not, their borrowed lustre would gradually languish, and die away, so that they would cease to excite desire. It is to be added, that if they be considered and pursued as means, they will be used as such, *i. e.* will actually involve us in the enjoyment of unlawful pleasures.

Secondly, The treasuring up the means of happiness bears a very near relation to ambition. Those who desire great degrees of riches, power, learning, &c. desire also that their acquisitions should be known to the world. Men have a great ambition to be thought happy, and to have it in their power to gratify themselves at pleasure; and this ostentatious design is one principal motive for acquiring all the supposed means of happiness. The reasons, therefore, which exclude ambition, must contribute to exclude self-interest also.

Thirdly, Gross self-interest has a manifest tendency to deprive us of the pleasures of sympathy, and to expose us to its pains. Rapaciousness extinguishes all sparks of good-will and generosity; and begets endless resentments, jealousies, and envies. And indeed a great part of the contentions, and mutual injuries, which we see in the world, arise, because either one or both the contending parties desire more than an equitable share of the means of happiness. It is to be added, that gross self-interest has a peculiar tendency to increase itself from the constant recurrency, and consequent augmentation, of the ideas and desires that relate to *self*, and the exclusion of those that relate to others.

Now this inconsistency of gross self-interest with sympathy would be some argument against it, barely upon supposition, that sympathy was one necessary part of our natures, and which ought to have an equal share with sensation, imagination, and ambition; but as it now begins to appear from the exclusion of these, and other arguments, that more than an equal share is due to sympathy, the opposition between them becomes a still stronger argument against self-interest.

Fourthly, There is, in like manner, an evident opposition between gross self-interest, and the pleasures of theopathy, and of the moral sense, and, by consequence, an insuperable objection to its being made our primary pursuit, deducible from these essential parts of our nature.

Fifthly, Gross self-interest, when indulged, devours many of the pleasures of sensation, and most of those of imagination and ambition, *i. e.* many of the pleasures from which it takes its rise. This is peculiarly true and evident in the love of money; but it holds also, in a certain degree, with respect to the other selfish pursuits. It must therefore destroy itself in part, as well as the pleasures of sympathy, theopathy, and the moral sense, with the refined self-interest grounded thereon. And thus it happens, that in very avaricious persons nothing remains but sensuality, sensual selfishness, and an uneasy hankering after money, which is a more imperfect state than that in which they were at their first setting off in infancy. Some of the stronger and more ordinary sensible pleasures and pains, with the desires after them, must remain in the most sordid, as long as they carry their bodies about with them, and are subjected to the cravings of the natural appetites, and to the impressions of external

objects. But a violent passion for money gets the better of all relish for the elegancies and amusements of life, of the desire of honour, love, and esteem, and even of many of the sensual gratifications. Now it cannot be, that a pursuit which is so opposite to all the parts of our nature, should be intended by the Author of it for our primary one.

Sixthly, Men, in treasuring up the means of happiness without limits, seem to go upon the supposition, that their capacity of enjoying happiness is infinite; and consequently that the stock of happiness laid up for them to enjoy hereafter is proportional to the stock of means which they have amassed together. But our capacity for enjoying happiness is narrow and fluctuating; and there are many periods, during which no objects, however grateful to others, can afford us pleasure, on account of the disorder of our bodies and minds. If the theory of these papers be admitted, it furnishes us with an easy explanation of this matter, by shewing that our capacity for receiving pleasure depends upon our associations, and upon the state of the medullary substance of the brain; and consequently that it must fail often, and correspond very imperfectly to the objects, which are usually called pleasurable ones.

Seventhly, It is very evident in fact, that self-interested men are not more happy than their neighbours, whatever means of happiness they may possess. I presume indeed, that experience supports the reasoning already alleged; but, however that be, it certainly supports the conclusion. Nay, one ought to say, that covetous men are, in general, remarkably miserable. The hardships, cares, fears, ridicule, and contempt, to which they subject themselves, appear to be greater evils than what fall to the share of mankind at an average.

Eighthly, One may put this whole matter in a short and obvious light, thus: the pursuit of the means of happiness cannot be the primary one, because, if all be means, what becomes of the end? Means, as means, can only be pleasant in a derivative way from the end. If the end be seldom or never obtained, the pleasure of the means must languish. The intellectual pleasures, that are become ends by the entire coalescence of the associated particulars, fade from being diluted with the mixture of neutral circumstances, unless they be perpetually recruited. A selfish expectation therefore, which is never gratified, must gradually languish.

I come now, in the second place, to shew that refined, self-interest, or the pursuit of the means for obtaining the pleasures of sympathy, theopathy, and the moral sense, ought not to be made a primary pursuit.

A person who is arrived at this refined self-interest, must indeed be advanced some steps higher in the scale of perfection, than those who are immersed in gross self-interest; inasmuch as this person must have overcome, in some measure, the gross

pleasures of sensation, imagination, and ambition, with the gross self-interest thereon depending, and have made some considerable progress in sympathy, theopathy, and the moral sense, before he can make it a question whether the pursuit of refined self-interest ought to be his primary pursuit or no. However, that it ought not, that this would detain him, and even bring him lower in the scale of perfection, will appear from the following reasons.

First, Many of the objections which have been brought against gross self-interest, retain their force against the refined, though in a less degree. Thus refined self-interest puts us upon treasuring up the same means as the gross; for the persons who are influenced by it, consider riches, power, learning, &c. as means of doing good to men, bringing glory to God, and enjoying comfortable reflections in their own minds in consequence thereof. But the desire of riches, power, learning, must introduce ambition, and other defilements, from the many corrupt associations that adhere to them. In like manner, refined self-interest has, like the gross, a tendency to destroy the very pleasures from which it took its rise, *i. e.* the pleasures of sympathy, theopathy, and the moral sense; it cannot afford happiness, unless the mind and body be properly disposed; it does not, in fact, make men happy; but is the parent of dissatisfaction, murmurings, and aridity; and, being professedly the pursuit of a bare means, involves the absurdity of having no real end in view. It may not be improper here for the reader just to review the objections made above to gross self-interest.

Secondly, Refined self-interest, when indulged, is a much deeper and more dangerous error than the gross, because it shelters itself under sympathy, theopathy, and the moral sense, so as to grow through their protection; whereas the gross self-interest, being avowedly contrary to them, is often stifled by the increase of benevolence and compassion, of the love and fear of God, and of the sense of duty to him.

Thirdly, It is allied to, and, as it were, part of the foregoing objection, which yet deserves a particular consideration, that the pride attending on refined self-interest, when carried to a certain height, is of an incorrigible, and, as it were, diabolical nature. And, upon the whole, we may observe, that as gross self-interest, when it gets possession of a man, puts him into a lower condition than the mere sensual brutal one, in which he was born; so refined self-interest, when that gets possession, depresses him still farther, even to the very confines of hell. However, it is still to be remembered, that some degree must arise in the beginning of a religious course; and that this, if it be watched and resisted, is an argument of our advancement in piety and virtue. But the best things, when corrupted, often become the worst.

I come now, in the last place, to consider what objections lie against rational self-interest, as our primary pursuit.

Now, here it may be alleged, first, That as we cannot but

desire any particular pleasure proposed to us, as long as the associations, which formed it, subsist in due strength; so, when any thing is believed to be the means of attaining our greatest possible happiness, the whole frame of our acquired nature puts us upon pursuing it. Rational self-interest must therefore always have a necessary influence over us.

Secondly, It may be alleged, that I have myself made rational self-interest the basis of the present inquiry after the rule of life, having supposed all along that our greatest possible happiness is the object of this rule.

And it certainly follows hence, that rational self-interest is to be put upon a very different footing from that of the gross and refined; agreeably to which the Scriptures propose general and indefinite hopes and fears, and especially those of a future state, and inculcate them as good and proper motives of action. But then, on the other hand, the Scriptures inculcate many other motives, distinct from hope and fear: such as the love of God and our neighbour, the law of our minds, &c. *i. e.* the motives of sympathy, theopathy, and the moral sense, as explained in this work. And we may see from the reasoning used in respect of gross and refined self-interest, that a constant attention to that which is the most pure and rational, to the most general hopes and fears, would extinguish our love of God and our neighbour, as well as the other particular desires, and augment the ideas and desires, which centre immediately and directly in *self*, to a monstrous height. Rational self-interest may therefore be said to lie between the impure motives of sensation, imagination, ambition, gross self-interest, and refined self-interest, on the one hand, and the pure ones of sympathy, theopathy, and the moral sense, on the other; so that when it restrains the impure ones, or cherishes the pure, it may be reckoned a virtue; when it cherishes the impure, or damps the pure, a vice. Now there are instances of both kinds, of the first in grossly vicious persons, of the last in those that have made considerable advancement in piety and virtue. In like manner, the impure motives of sensation, imagination, &c. differ in degree of impurity from each other; and therefore may be either virtues or vices, in a relative way of speaking. It seems, however, most convenient, upon the whole, to make rational self-interest the middle point; and this, with all the other reasoning of this paragraph, may serve to shew, that it ought not to be cultivated primarily. But I shall have occasion to consider this matter farther under the next proposition but one, when I come to deduce practical observations on self-interest and self-annihilation.

It may be reckoned a part of the gross and refined self-interests, to secure ourselves against the hazards of falling into the pains of the other six classes, and a part of rational self-interest, to provide against our greatest danger; and it might be shewn in like manner, that neither ought these to be primary pursuits.

PROP. LXVI.—*A strict Regard to the Precepts of Benevolence, Piety, and the Moral Sense, favours even gross Self-Interest; and is the only Method by which the refined and rational can be secured.*

HERE we may observe,

First, That since the regard to benevolence, piety, and the moral sense, procures the pleasures of sensation, imagination, and ambition, in their greatest perfection for the most part; it must favour gross self-interest, or the pursuit of the means of these.

Secondly, This regard has, in many cases, *i. e.* to procure riches, power, learning, &c. And though it happens sometimes, that a man must forego both the means for obtaining pleasure, and pleasure itself, from a regard to duty; and happens often, that the best men have not the greatest share of the means, yet it seems that the best men have, in general, the fairest prospect for that competency, which is most suitable to real enjoyment. Thus, in trades and professions, though it seldom is observed, that men eminent for piety and charity amass great wealth (which indeed could not well consist with these virtues), yet they are generally in affluent or easy circumstances, from the faithful discharge of duty, their prudence, moderation in expenses, &c. and scarce ever in indigent ones. A sense of duty begets a desire to discharge it; this recommends to the world, to the bad as well as to the good; and, where there are instances apparently to the contrary, farther information will, for the most part, discover some secret pride, negligence, or imprudence, *i. e.* something contrary to duty, to which the person's ill success in respect of this world may be ascribed.

Thirdly, A regard to duty plainly gives the greatest capacity for enjoyment; as it secures us against those disorders of body and mind, which render the natural objects of pleasure insipid or ungrateful.

Fourthly, As to refined self-interest, or the pursuit of the means for obtaining the pleasures of sympathy, theopathy, and the moral sense, it appears at first sight, that a due regard to these must procure for us both the end, and the means.

Fifthly, However the gross or refined self-interest may, upon certain occasions, be disappointed, the rational one never can, whilst we act upon a principle of duty. Our future happiness must be secured thereby. This the profane and profligate, as far as they have any belief of God, providence, or a future state (and I presume, that no one could ever arrive at more than scepticism and uncertainty in these things), allow, as well as the devout and pious Christian. And, when the rational self-interest is thus secured, the disappointments of the other two become far less grievous, make far less impression upon the mind. He that has a certain reversion of an infinite and eternal inheritance, may be very indifferent about present possessions.

PROP. LXVII.—*To deduce practical Observations on Self-Interest and Self-Annihilation.*

SELF-INTEREST being reckoned by some writers the only stable point upon which a system of morality can be erected, and self-annihilation by others the only one in which man can rest, I will here endeavour to reconcile these two opinions, giving at the same time both a general description of what passes in our progress from self-interest to self-annihilation, and some short hints of what is to be approved or condemned in this practice.

First, then, The vicious pleasures of sensation, imagination, and ambition, being often very expensive, are checked by the grossest of all the self-interests, the mere love of money; and the principle upon which men act in this case is esteemed one species of prudence. This may be tolerated in others, where it is not in our power to infuse a better motive; but, in a man's self, it is very absurd to have recourse to one which must leave so great a defilement, when others that are purer and stronger, rational self-interest particularly, are at hand.

Secondly, The desire of bodily and mental accomplishments, learning particularly, considered as means of happiness, often checks both the fore-mentioned vicious pleasures, and the love of money. Now this kind of self-interest is preferable to the last indeed; but it cannot be approved by any that are truly solicitous about their own reformation and purification.

Thirdly, Gross self-interest sometimes excites persons to external acts of benevolence, and even of piety; and though there is much hypocrisy always in these cases, yet an imperfect benevolence or piety is sometimes generated in this way. However, one cannot but condemn this procedure in the highest degree.

Fourthly, As refined self-interest arises from benevolence, piety, and the moral sense; so, conversely, it promotes them in various ways. But, then, as it likewise checks their growth in various other ways, it cannot be allowed in many cases, and is, upon the whole, rather to be condemned than approved. More favour may be shewn to it, where it restrains the vicious pleasures of sensation, imagination, and ambition.

Fifthly, Rational self-interest puts us upon all the proper methods of checking the last-named vicious pleasures with gross and refined self-interest, and begetting in ourselves the virtuous dispositions of benevolence, piety, and the moral sense. This part of our progress is extremely to be approved, and especially the last branch of it.

Sixthly, The virtuous dispositions of benevolence, piety, and the moral sense, and particularly that of the love of God, check all the foregoing ones, and seem sufficient utterly to extinguish them at last. This would be perfect self-annihilation, and resting in God as our centre. And upon the whole, we may conclude, that though it be impossible to begin without sensuality, and

sensual selfishness, or to proceed without the other intermediate principles, and particularly that of rational self-interest; yet we ought never to be satisfied with ourselves, till we arrive at perfect self-annihilation, and the pure love of God.

We may observe also, that the method of destroying *self*, by perpetually substituting a less and purer self-interest for a larger and grosser, corresponds to some mathematical methods of obtaining quantities to any required degree of exactness, by leaving a less and less error *sine limite*. And though absolute exactitude may not be possible in the first case, any more than in the last; yet a degree sufficient for future happiness is certainly attainable by a proper use of the events of this life.

SECT. VI.

THE REGARD DUE TO THE PLEASURES AND PAINS OF SYMPATHY IN FORMING THE RULE OF LIFE.

PROP. LXVIII.—*The Pleasures of Sympathy improve those of Sensation, Imagination, Ambition, and Self-Interest; and unite with those of Theopathy and the Moral Sense; they are self-consistent; and admit of an unlimited Extent: they may therefore be our primary Pursuit.*

THAT the pleasures of sympathy improve those of sensation, imagination, ambition, and self-interest, by limiting and regulating them, appears from the four last sections.

Their union and entire coincidence with those of theopathy are evident, inasmuch as we are led by the love of good men to that of God, and back again by the love of God to that of all his creatures in and through him; also as it must be the will of an infinitely benevolent Being, that we should cultivate universal unlimited benevolence.

In like manner, they may be proved to unite and coincide with the pleasures of the moral sense, both because they are one principal source of the moral sense, and because this, in its turn, approves of and enforces them entirely.

In order to prove their unlimited extent, let us suppose, as we did before of sensation, that a person took all opportunities of gratifying his benevolent desires; that he made it his study, pleasure, ambition, and constant employment, either to promote happiness, or lessen misery, *to go about doing good*.

First, then, It is very plain, that such a person would have a very large field of employment. The relations of life, conjugal,

parental, filial, to friends, strangers, enemies, to superiors, equals, inferiors, and even to brutes, and the necessities of each, are so numerous, that, if we were not greatly wanting in benevolent affections, we should have no want of fit objects for them.

Secondly, As the occasions are sufficient to engage our time, so we may, in general, expect success. Not only the persons themselves, to whom we intend to do service, may be expected to concur, but others also, in general; inasmuch as benevolence gains the love and esteem of the beholders, has a persuasiveness and prevalence over them, and engages them to co-operate towards its success. It is very necessary indeed, that all benevolent persons should guard against the sallies of pride, self-will, and passion, in themselves, *i. e.* take care that their benevolence be pure; also that it be improved by piety, and the moral sense; else it is probable, that they will meet with many disappointments. But this is no argument against the unlimited nature of benevolence: it only tends to exclude the mixture and defilement of ill dispositions; and to shew the necessary connexion of the love of our neighbour with that of God, and with the divine signature of conscience, which I all along contend for. When our benevolence is thus pure, and thus directed, it will seldom fail of gaining its purpose. And yet disappointments must sometimes happen to the purest benevolence; else our love of God, and resignation to his will, which is the highest principle of all, could not be brought to perfection. But then this will happen so rarely as to make no alteration in our reasonings, with respect to the general state of things; which kind of reasoning and certainty is all that we are qualified for in our present condition.

Thirdly, As the benevolent person may expect both sufficient employment and success, in general; so it does not appear from the experience of those who make the trial, that the relish for these pleasures languishes, as in other cases; but, on the contrary, that it gathers strength from gratification. We hear men complaining frequently of the vanity and deceitfulness of the other pleasures after possession and gratification, but never of those of benevolence, when improved by religion, and the moral sense. On the contrary, these pleasures are greater in enjoyment than expectation; and continue to please in reflection, and after enjoyment. And the foregoing history of association may enable us to discover how this comes to pass. Since the pleasures of benevolence are, in general, attended with success, and are consistent with, and productive of, the several inferior pleasures in their due degree, as I have already shewn, and also are farther illuminated by the moral and religious pleasures, it is plain that they must receive fresh recruits upon every gratification, and, therefore, increase perpetually, when cultivated as they ought to be.

The self-consistency of benevolence appears from the peculiar harmony, love, esteem, and mutual co-operation, that prevail amongst benevolent persons; also from the tendency that acts of

benevolence, proceeding from *A* to *B*, have to excite correspondent ones reciprocally from *B* to *A*, and so on indefinitely. We may observe farther, that, when benevolence is arrived at a due height, all our desires and fears, all our sensibilities for ourselves, are more or less transferred upon others by our love and compassion for them; and, in like manner, that when our moral sense is sufficiently established and improved, when we become influenced by what is fit and right, our imperfect sensibility for others lessens our exorbitant concern for ourselves by being compared with it, at the same time that compassion takes off our thoughts from ourselves. And thus benevolence to a single person may ultimately become equal to self-interest, by this tendency of self-interest to increase benevolence, and reciprocally of benevolence to lessen self-interest; though self-interest was at first infinitely greater than benevolence; *i. e.* we, who come into the world entirely selfish, earthly, and *children of wrath*, may at least be exalted to *the glorious liberty of the sons of God*, by learning to love our neighbours as ourselves: we may learn to be as much concerned for others as for ourselves, and as little concerned for ourselves as for others; both which things tend to make benevolence and self-interest equal, however unequal they were at first.

And now a new scene begins to open itself to our view. Let us suppose, that the benevolence of *A* is very imperfect; however, that it considerably exceeds his malevolence; so that he receives pleasure, upon the whole, from the happiness of *B, C, D,* &c. *i. e.* from that of the small circle of those whom he has already learnt to call his neighbours. Let us also suppose, that *B, C, D,* &c. though affected with a variety of pains, as well as pleasures, are yet happy, upon the whole; and that *A*, though he does not see this balance of happiness clearly, yet has some comfortable general knowledge of it. This then is the happiness of good men in this present imperfect state; and it is evident, that they are great gainers, upon the whole, from their benevolence. At the same time it gives us a faint conception of *A's* unbounded happiness, on supposition that he considered every man as his friend, his son, his neighbour, his second self, and loved him as himself; and that his neighbour was exalted to the same unbounded happiness as himself by the same unlimited benevolence. Thus *A, B, C, D,* &c. would all become, as it were, new sets of senses, and perceptive powers, to each other, so as to increase each other's happiness without limits; they would all become *members of the mystical body of Christ*; all have an equal care for each other; all increase in love, and come to their *full stature*, to perfect manhood, *by that which every joint supplieth*; happiness would circulate through this mystical body without end, so as that each particle of it would, in due time, arrive at each individual point, or sentient being, of the great whole, that each would *inherit all things*.

To strengthen our presumptions in favour of benevolence, as the primary pursuit of life, still more; let it be considered, that its pleasures lie open to all kinds and degrees of men, since every man has it in his power to benefit others, however superior or inferior, and since we all stand in need of each other. And the difference which nature has put between us and the brutes, in making us so much more dependent upon, and necessary to, each other, from the cradle to the grave, for life, health, convenience, pleasure, education, and intellectual accomplishments, so much less able to subsist singly, or even in small bodies, than the brutes, may be considered as one mark of the superior excellence of the social pleasures to man. All the tendencies of the events of life, ordinary and extraordinary, of the relations of life, of the foregoing pleasures and pains, to connect us to each other, to convert accidental, natural, instituted associations into permanent coalescences (for all this is effected by the power of association so much spoken of in these papers,) so that two ill men can scarce become known to each other familiarly, without conceiving some love, tenderness, compassion, complacence for each other, are arguments to the same purpose. And our love to relations and friends, that have particular failings, teaches us to be more candid towards others, who have the like failings. At the same time it shews the consistency of benevolence with itself, and its tendency to improve itself; that we love, esteem, assist, and encourage the benevolent more than others; so that a benevolent action not only excites the receiver to a grateful return, but also the by-stander to approve and reward; and the benevolent man receives an hundred-fold even in this world. But it would be endless to pursue this. Benevolence is indeed the grand design and purport of human life, of the present probationary state; and therefore every circumstance of human life must point to it, directly or indirectly, when duly considered.

COR. I. Since benevolence now appears to be a primary pursuit, it follows, that all the pleasures of malevolence are forbidden, as being so many direct hindrances and bars to our happiness. The pleasures of sensation, imagination, ambition, and self-interest, may all be made consistent with benevolence, when limited by, and made subject to it, at least in this imperfect state; but those of malevolence are quite incompatible with it. As far as malevolence is allowed, benevolence must be destroyed; they are heat and cold, light and darkness, to each other. There is, however, this exception; that where wishing evil to some disposes us to be more benevolent upon the whole, as in the case of what is called a just indignation against vice, it may perhaps be tolerable in the more imperfect kinds of men, who have need of this direction and incitement to keep them from wandering out of the proper road, and to help them forward in it. But it is extremely dangerous to encourage such a disposition of mind by satire, invective, dispute, however unworthy the oppo-

ment may be, as these practices generally end in rank malevolence at last. *The wrath of man worketh not the righteousness of God.*

COR. II. As we must forego the pleasures of malevolence, so we must patiently and resolutely endure the pains of benevolence, particularly those of compassion. But we shall not be losers upon either of these accounts. The pleasures of the moral sense, which result from these virtues, will in the first case compensate for what we forego, and in the last overbalance what we endure. Besides which, mercy and forgiveness are themselves pleasures, and productive of many others in the event; and compassion generally puts us upon such methods, as both make the afflicted to rejoice, and beget in ourselves a stronger disposition to rejoice with them. However, we may learn from these two corollaries, that as our passage through the four inferior, and, as it were, forbidden, classes of pleasure and pain, is not entire self-denial and sufferance, so some degrees of these are necessary in respect of the three superior classes. We must *weep with those that weep*, as well as *rejoice with those that rejoice*. In like manner, theopathy, and the moral sense, are the occasions of some pain, as well as of great and lasting pleasure; as will appear hereafter. Now all this mixture of pain with pleasure in each class, as also the difficulty which we find in bringing the inferior classes into a due subordination to the superior, are consequences and marks of our fallen and degenerate state.

COR. III. As benevolence is thus supported by many direct arguments, so there are similar and opposite arguments, which shew that malevolence is the bane of human happiness; that it occasions misery to the doer as well as to the sufferer; that it is infinitely inconsistent with itself, and with the course of nature; and that it is impossible that it should subsist for ever. Now these become so many indirect ones for benevolence, and for our making it the supreme pleasure and end of our lives. In order to make this appear more fully, let us take a survey of human life on the reverse side to that which we have before considered. We shall there see, that injuries are increased in various ways by reciprocation, till at last mutual sufferings oblige both parties to desist; that the course and constitution of nature give us numberless admonitions to forbear; and that the hand of every man, and the power of every thing, is against the malevolent, so that, if we should suppose the beings *A, B, C, D, &c.* to be purely malevolent, to have each of them an indefinite number of enemies, they would first cease from their enmity on account of their mutual sufferings, and become purely selfish, each being his own sole friend and protector; and afterwards, by mutual good offices, endear themselves to each other; so that at last each would have an indefinite number of friends, *i. e.* be indefinitely happy. This is indeed a kind of supposition; but its obvious correspondence with what we see and feel in real life, is a strong

argument both of the infinite goodness of God, and of the consequent doctrine of the tendency of all beings to unlimited happiness through benevolence. For the beings *A, B, C, D, &c.* could no more stop at pure selfishness, or any other intermediate point, than they could rest in pure malevolence. And thus the arguments, which exclude pure malevolence, necessarily infer pure unlimited benevolence.

PROP. LXIX.—*To deduce practical Rules for augmenting the benevolent Affections, and suppressing the malevolent ones.*

For this purpose we ought, first, Diligently to practise all such acts of friendship, generosity, and compassion, as our abilities of any kind extend to; and rigorously to refrain from all sallies of anger, resentment, envy, jealousy, &c. For though our affections are not directly and immediately subject to the voluntary power, yet our actions are; and consequently our affections also mediately. He that at first practises acts of benevolence by constraint, and continues to practise them, will at last have associated such a variety of pleasures with them, as to transfer a great instantaneous pleasure upon them, and beget in himself the affections from which they naturally flow. In like manner, if we abstain from malevolent actions, we shall dry up the ill passions, which are their sources.

Secondly, It will be of great use frequently to reflect upon the great pleasures and rewards attending on benevolence, also upon the many evils, present and future, to which the contrary temper exposes us. For thus we shall likewise transfer pleasure and pain by association upon these tempers respectively; and rational self-interest will be made to beget pure benevolence, and to extinguish all kinds and degrees of malevolence.

Thirdly, It is necessary to pray frequently and fervently (*i. e.* as far as we can excite fervour by our voluntary powers) for others, friends, benefactors, strangers, enemies. All exertions of our affections cherish them; and those made under the more immediate sense of the divine attributes have an extraordinary efficacy this way, by mixing the love, awe, and other exalted emotions of mind attending our addresses to God, with our affections towards men, so as to improve and purify them thereby. Petitions for the increase of our benevolence, and suppression of our malevolence, have the same tendency.

Fourthly, All meditations upon the attributes of God, and particularly upon his infinite benevolence to all his creatures, have a strong tendency to refine and augment our benevolent affections.

Fifthly, The frequent consideration of our own misery, helplessness, sinfulness, entire dependence upon God, &c. raises in us compassion for others, as well as concern, and earnest desires and prayers, for ourselves. And compassion is, in this imperfect probationary state, a most principal part of our benevolent affections.

PROP. LXX.—*To deduce practical Rules for the Conduct of Men towards each other in Society.*

SINCE benevolence is now proved to be a primary pursuit, it follows, that we are to direct every action so as to produce the greatest happiness, and the least misery, in our power. This is that rule of social behaviour, which universal unlimited benevolence inculcates.

But the application of this rule in real life is attended with considerable difficulties and perplexities. It is impossible for the most sagacious and experienced persons to make any accurate estimate of the future consequences of particular actions, so as, in all the variety of circumstances which occur, to determine justly, which action would contribute most to augment happiness and lessen misery. We must therefore, instead of this most general rule, substitute others less general, and subordinate to it, and which admit of a more commodious practical application. Of this kind are the ten rules that follow. Where they coincide, we may suppose them to add strength to each other; where they are opposite, or seemingly so, to moderate and restrain one another; so as that the sum total shall always be the best direction in our power for promoting the happiness, and lessening the misery, of others.

The first rule is obedience to the scripture precepts, in the natural, obvious, and popular meaning of them. That this must, in general, contribute to public good, needs no proof: piety and benevolence evidently coincide here, as in other cases. The scripture precepts are indeed themselves *the rule of life*. But then there is the same sort of difficulty in applying them accurately to particular cases, as in applying the above-mentioned most general rule, by means of an estimate of the consequences of actions. It is impossible, in many particular cases, from the nature of language, to determine whether the action under consideration come precisely under this or that scripture precept, interpreted literally, as may appear from the endless subtleties and intricacies of casuistical divinity. However, it cannot but be that the common and popular application must, for the most part, direct us to their true intention and meaning. Let every man therefore, in the particular circumstances of real life, recollect the scripture precepts, and follow them in their first and most obvious sense, unless where this is strongly opposite to some of the following rules; which yet will seldom happen.

Secondly, Great regard must be had both to our own moral sense, and to that of others. This rule coincides remarkably with the foregoing. They are together the chief supports of all that is good, even in the most refined and philosophical, as well as in the vulgar; and therefore must not be weakened, or explained away.

Thirdly, It is very proper in all deliberate actions to weigh, as

well as we can, the probable consequences on each side, and to suffer the balance to have some influence in all cases, and the chief where the other rules do not interfere much or explicitly. But to be determined by our own judgments as to consequences, in opposition to the two foregoing rules, or to those that follow, savours much of pride, and is often only a cloak for self-interest and maliciousness.

Fourthly, The natural motions of good-will, compassion, &c. must have great regard paid to them, lest we contract a philosophical hardness of heart, by endeavouring or pretending to act upon higher and more extensively beneficial views, than vulgar minds, the softer sex, &c. Some persons carry this much too far on the other side, and encourage many public mischiefs, through a false misguided tenderness to criminals, persons in distress through present gross vices, &c. For the mere instantaneous motions of good-will and compassion, which are generated in so many different ways in different persons, cannot be in all more than a good general direction for promoting the greatest good.

Fifthly, The rule of placing ourselves in the several situations of all the persons concerned, and inquiring what we should then expect, is of excellent use for directing, enforcing, and restraining our actions, and for begetting in us a ready, constant sense of what is fit and equitable.

Sixthly, Persons in the near relations of life, benefactors, dependents, and enemies, seem to have, in most cases, a prior claim to strangers. For the general benevolence arises from our cultivation of these particular sources of it. The root must therefore be cherished, that the branches may flourish, and the fruit arrive to its perfection.

Seventhly, Benevolent and religious persons have, all other circumstances being equal, a prior claim to the rest of mankind. Natural benevolence itself teaches this, as well as the moral sense. But it is likewise of great importance to the public, thus to encourage virtue. Not to mention, that all opportunities and powers become more extensively beneficial, by being entrusted with deserving persons.

Eighthly, Since the concerns of religion, and a future state, are of infinitely more importance than those which relate to this world, we ought to be principally solicitous about the establishment and promotion of true and pure religion, and to make all our endeavours concerning temporal things subservient to the precepts for teaching all nations, and for carrying the everlasting gospel to the ends of the earth.

Ninthly, We ought to pay the strictest regard to truth, both with respect to affirmations and promises. There are very few instances, where veracity of both kinds is not evidently conducive to public good, and falsehood in every degree pernicious. It follows therefore, that, in cases where appearances are otherwise, the general regard to truth, which is of so much consequence to

the world, ought to make us adhere inviolably to it; and that it is a most dangerous practice to falsify, as is often done, from false delicacy, pretended, or even real officiousness, false shame, and other such disingenuous motives, or even from those that border upon virtue. The harm which these things do, by creating a mutual diffidence, and disposition to deceive, in mankind, is exceedingly great; and cannot be counterbalanced by the present good effects, assigned as the reasons for this practice. Yet still the degrees are here, as in other cases, so insensible, and the boundaries so nice, that it is difficult, or even impossible, to give any exact rule. A direct falsehood seems scarce to admit a toleration, whatever be thrown into the opposite scale; unless in cases of madness, murder to be prevented, &c. Equivocations, concealments, pretences, are in general unjustifiable; but may perhaps be sometimes allowed. The wisdom of the serpent joined to the innocence of the dove, or christian prudence to christian simplicity and charity, will generally enable men to avoid all difficulties. There is scarce any thing which does greater violence to the moral sense in well-educated persons, than disingenuity of any kind, which is a strong argument against it. Lies and liars are particularly noted in the prophetic writings; and the great sin of idolatry is represented under this image. As to false oaths, affirmative or promissory, there seems to be no possible reason sufficient to justify the violation of them. The third commandment, and the reverence due to the Divine Majesty, lay an absolute restraint here.

Tenthly, Obedience to the civil magistrate is a subordinate general rule, of the utmost importance. It is evidently for the public good, that every member of a state should submit to the governing power, whatever that be. Peace, order, and harmony, result from this in the general; confusion and mischief of all kinds from the contrary. So that though it may and must be supposed, that disobedience, in certain particular cases, will, as far as the single act, and its immediate consequences, are considered, contribute more to public good, than obedience; yet, as it is a dangerous example to others, and will probably lead the person himself into other instances of disobedience afterwards, &c. disobedience in every case becomes destructive of public happiness upon the whole. To this we may add, that as part of our notions of, and regards to, the Deity, are taken from the civil magistrate; so conversely, the magistrate is to be considered as God's vicegerent on earth; and all opposition to him weakens the force of religious obligations, as well as of civil ones; and if there be an oath of fidelity and submission, or even a bare promise, this will give a farther sanction. Lastly, the precepts of the New Testament, given under very wicked governors, and the whole tenor of it, which supposes Christians to have higher views, and not to intermeddle with the kingdoms of this world, enjoin an implicit submission.

We ought therefore, in consequence of this tenth rule, to reverence all persons in authority; not to pass hasty censures upon their actions; to make candid allowances on account of the difficulties of government, the bad education of princes, and persons of high birth, and the flatteries and extraordinary temptations, with which they are surrounded; to observe the laws ourselves, and promote the observance of them, where the penalties may be evaded, or are found insufficient; to look upon property as a thing absolutely determined by the laws; so that though a man may and ought to recede from what the law would give him, out of compassion, generosity, love of peace, view of the greater good to the whole, &c. yet he must never evade, strain, or in any way do violence to the laws, in order to obtain what he may think his own according to equity; and wherever he has offended, or is judged by lawful authority to have offended, he must submit to the punishment, whatever it be.

Here two things may be objected in respect of this tenth rule: First, That the duty to magistrates ought to be deduced from the origin of civil government. Secondly, That it is lawful to resist the supreme magistrate openly, in those cases, where the good consequences of open resistance appear in the ultimate result to overbalance the ill consequences.

To the first I answer, that we here suppose benevolence to be the rule of duty, public good the end of benevolence, and submission to magistrates the means of promoting the public good. Unless therefore something can be objected to one of these three positions, the conclusion, that submission to magistrates is a duty, must stand. It appears to me also, that this method of deducing obedience to magistrates is much more simple and direct than that from the origin of civil government. For the real origin of civil government having been either the gradual transition and degeneration of parental patriarchal authority (which being originally directed by pure love, and supported by absolute authority, can never be paralleled now) into small monarchies in the ancient world, of which we know nothing accurately; or the usurped power of conquerors and tyrants; or the delegated power of those, who in difficult and factious times have gained over the minds of the populace to themselves, and balanced the interests and ambition of particulars against one another; it seems that little of use to public happiness can be drawn from these patterns, where the persons concerned were either very little solicitous about public happiness, or very little qualified to make a proper estimate of the best methods of attaining it, or, lastly, were obliged to comply with the prejudices and established customs of an ignorant head-strong multitude. The only pattern of great use and authority appears to be the Jewish Theocracy. As to the fictitious supposition, that a set of philosophers, with all their natural rights about them, agree to give up certain of these, in order to preserve the rest, and promote

the good of the whole, this is too large a field. Besides, public good must either be made the criterion of natural rights, and of the obligation to give them up, &c. which would bring this hypothesis to coincide with the direct obvious considerations above-mentioned, or if any other criterion be assumed, the determinations will be false. This method of reasoning has been adopted too servilely, by the force which association has over the human mind, from the technical methods of extending human laws to cases not provided for explicitly, and particularly from the reasonings made use of in the civil law. However, the writers of this class have delivered many excellent particular precepts, in relation to the duties both of public and of private life; and therefore have deserved well of the world, notwithstanding that their foundation for the laws of nature and nations be liable to the foregoing objections.

Secondly, It is said, that there are certain cases, in which open resistance is lawful. And it must be owned, that where there is no oath of allegiance, or where that oath is plainly conditional, cases may be put, where resistance with all its consequences seems more likely to produce public good, than non-resistance. If therefore a man can lay his hand upon his heart, and fairly declare, that he is not influenced by ambition, self-interest, envy, resentment, &c. but merely by tenderness and good-will to the public; I cannot presume to say, that he is to be restrained, or that Christianity, that *perfect law of liberty*, whose end is *peace and good-will to men*, should be made an obstruction to any truly benevolent endeavours, where *Christian liberty* is not made use of as a *cloak for maliciousness*. But these cases are so rare, that it is needless to give any rules about them. In public disturbances, when men's passions are up, there are so many violences on all hands, that it is impossible to say which side one would wish to have uppermost; only there is always a prejudice in favour of the last establishment, because the minds of the multitude may be quieted sooner by getting into the former road. Rules of this kind can only be supposed to relate to those that are disposed to obey them, which are very few in comparison. If one could suppose, that all would obey implicitly, no disturbance could arise; if all disobey, it is infinite anarchy. Therefore, of all the intermediate suppositions, those seem to be the best, in which most obey. In short, it appears to be the duty of a good Christian to sit still, and suffer the children of this world to dispute and fight about it; only submitting himself to the powers in being, whatever they are (they cannot be entitled to less regard than the heathen emperors, to whom the apostles enjoined obedience) for the sake of peace and quietness to himself and others; and as much as in him lies, moderating the heats and animosities of parties against each other. However, I do not mean, that those who, according to the constitution of a government, have an executive or legislative

power lodged with them, should not exert it with authority. As to the case of oaths, no view of public good can be sufficient to supersede so sacred an obligation. And thus it is not only allowed to, but even required of, a good Christian, to be active in the defence of an establishment, to which he has given an oath to that purpose.

Other rules, besides the ten foregoing, might be assigned, or these expressed in a different way. I have put down those which appear to me to be, in fact, the chief principles of social conduct to wise and good men. They must all be supposed to influence and interpret each other. Let a man only divest himself of all self-regards, as much as possible, and love his neighbour as himself, and God above all, and he will generally find some point, and that without much difficulty or perplexity, in which all these rules unite to produce the greatest good, upon the whole, to all the persons concerned.

I proceed next to consider briefly the several principal relations of life, and the duties arising from them, according to the foregoing or such like rules.

The first of these is that of husband and wife. The loving our neighbour as ourselves begins here. This is the first instance of it; and, where this love is mutual and perfect, there an entire equality of the two sexes takes place. The authority of the man is only a mark of our present degenerate state, by reason of which dominion must be placed somewhere, and therefore in the man, as being of greater bodily strength and firmness of mind. But this is that kind of right or property, which men are obliged to give up, though women are also obliged to acknowledge it. Suppose the sexes to share all their joys and griefs perfectly, to have an entire concern for each other, and especially for each other's eternal welfare, and they are, as it were, reinstated in paradise; and the dominion of the man over the woman, with her subjection, and consequent reluctance, can only take place again upon their mutual transgression. And though in this imperfect state it seems impossible, from the theory above given, for any one to love another, in every branch of desire and happiness, entirely as himself; yet there appear to be such near approaches to it in benevolent, devout, married persons, united upon right motives, as to annihilate all considerable, or even perceptible distinction. It is of the utmost importance, that this grand foundation of all benevolence be duly laid, on account both of public and private happiness. The chief or only means of doing this is religion. Where both parties have it in a high degree, they cannot fail of mutual happiness; scarce if one have it: where both are greatly defective in this principal article, it is almost impossible but dissensions, uneasiness, and mutual offences, should arise.

The second great relation of life is that of parents to children; the principal duty of which is the giving a right education, or

the imprinting such associations upon the minds of children, as may conduct them safe through the labyrinths of this world to a happy futurity. Religion therefore here again appears to be the one only necessary thing. It is the design of the present chapter to shew, that it contributes as certainly to give us the *maximum* of happiness in this world, at least the fairest prospect of it, as to secure it in the next. So that a parent must be led to the inculcating virtue in every view. The chief errors in education are owing to the want of this persuasion in a practical way; or to a false tenderness and opinion of the parent, whereby he is led to believe, or flatter himself, that his child's nature is not so degenerate and corrupt, as to require frequent corrections and restraints, with perpetual encouragements and incentives to virtue by reward, example, advice, books, conversation, &c. Otherwise it would appear from the history of the mind, its affections and passions, before given, that few children would miscarry. Where due care is taken from the first, little severity would ordinarily be necessary; but in proportion as this care is neglected in the first years, a much greater degree of care, with high degrees of severity, both bodily and mental, become absolutely requisite to preserve from misery here and hereafter. We see that men of the ordinary standard in virtue are seldom brought to a state of repentance and salvation, without great sufferings, both bodily and mental, from diseases, sad external accidents, death of friends, loss of fortunes, &c. How then can it be supposed that children can be brought into the right way without analogous methods, both bodily and mental, though gentler indeed, in proportion as the child's age is more tender? And this ought to make all affectionate parents labour from the earliest dawning of understanding and desire, to check the growing obstinacy of the will; curb all sallies of passion; impress the deepest, most amiable, reverential, and awful apprehensions of God, a future state, and all sacred things: restrain anger, jealousy, selfishness; encourage love, compassion, generosity, forgiveness, gratitude; excite, and even compel to, such industry as the tender age will properly admit. For one principal end and difficulty of life is to generate such moderate, varying, and perpetually actuating motives, by means of the natural sensible desires being associated with, and parcelled out upon, foreign objects, as may keep up a state of moderate cheerfulness, and useful employment, during the whole course of our lives: whereas sensual, blind, and uninformed desire presses violently for immediate gratification, is injurious to others, and destroys its own aims, or, at the best, gives way only to spleen and dissatisfaction.

As to the other duties towards children, such as care of their present and future health of body, provision of external necessities and conveniencies for them, &c. they are sufficiently obvious, and can scarce be neglected by those who are truly solicitous about the principal point, a religious education.

The duties of children to parents are submission, obedience, gratitude even to the worst. For it can scarce be supposed, that children have not great obligations to their parents, upon the whole. And as the love of parents to children may serve to give parents a feeling conviction of the infinite benevolence of God our heavenly father, so the submission of children to parents is the pattern of, and introduction to, true religion; and therefore is of infinite importance to be duly paid. Which may serve as an admonition both to parents, to shew themselves fit vicegerents of God, and to children, to give them the respect due to them as such.

As the reciprocal duties between parents and children are patterns of the reciprocal duties between superiors and inferiors of all kinds; so the duties and affections between brethren and sisters are our guides and monitors in respect of equals: both which things are intimated in these and such like scripture phrases; *intreat an elder as a father; the younger men as brethren; love as brethren, &c.* The several events of childhood, the conjunction of interests, the examples of others, &c. impress upon us a greater concern, love, compassion, &c. for all persons nearly related to us in blood, than for others in like circumstances. And though the ultimate ratio of duty is to love every man equally, because we are to love every man as ourselves; yet since our condition here keeps us in some degree the necessary slaves of self-love, it follows that neither ought we to love all persons equally, but our relations, friends, and enemies, preferably to utter strangers; lest, in endeavouring to love all equally, we come not to love others more, but our brethren less, than we did before.

The cleaving of our affections to all with whom we have frequent pleasing intercourses, with mutual obligations, is the foundation of friendship; which yet cannot subsist long, but amongst the truly religious. And great care ought to be taken here, not to have men's persons in admiration, not to esteem our friend a nonpareil. There is great pride and vanity in this, just as in the like opinions concerning ourselves, our children, possessions, &c. Such intimacies, by exalting one above measure in our love and esteem, must depress others; and they generally end in jealousies and quarrels, even between the two intimates. All men are frail and imperfect, and it is a great injury to any man, to think more highly of him than he deserves, and to treat him so. Our regards cannot continue long strained up to an unnatural pitch. And if we consider, that we all have a proper business in life, which engages us in a variety of christian actions, and consequently of friendships and intimacies, this peculiar attachment of one person to another of the same sex will appear inconsistent with the duties of life. Where the sexes are different, such an attachment is either with a view to marriage, or else it becomes liable to still greater objections.

As to enemies, the forgiving them, praying for them, doing them good offices, compassion to them, as exposing themselves to sufferings by a wrong behaviour, the sense of our having injured them, which is generally the case more or less, &c. have in generous and religious men a peculiar tendency to excite love and compassion for them.

The last relation which I shall consider is that of magistrates, *i. e.* the persons who in each society have the legislative or executive powers, or both, committed to them. The duty arising from this relation may be distinguished into two branches. First, that towards the persons over whom the magistrate presides; Secondly, that towards other states.

In respect of the first, we may at once affirm, that the principal care of a magistrate, of the father of a people, is to encourage and enforce benevolence and piety, the belief and practice of natural and revealed religion; and to discourage and restrain infidelity, profaneness, and immorality, as much as possible. And this,

First, Because the concerns of another world are of infinitely greater importance than any relating to this; so that he who wishes well to a people, and presides over them for their good, cannot but be chiefly solicitous and industrious in this particular.

Secondly, Because even the present well-being of states depends entirely upon the private virtues of the several ranks and orders of men. For the public happiness is compounded of the happiness of the several individuals composing the body politic; and the virtues of industry, temperance, chastity, meekness, justice, generosity, devotion, resignation, &c. have a tendency to promote the happiness both of the persons that possess them, and of others.

It will therefore be the duty of the magistrate, in making and executing laws, to inquire which method appears to be most conducive to virtue in the people, to pursue this simply and steadily, and not to doubt but that all the subordinate ends of government, as those of increasing the riches and power of the state, promoting arts and sciences, &c. will be obtained in such degrees as they ought, as are productive of real happiness to the people, by the same means. But where it is doubtful what method is most conducive to virtue, there the subordinate ends are to be taken into consideration, each according to its value: just as in the case of self-interest in individuals; where benevolence, piety, and the moral sense, are entirely silent, there cool, rational self-interest may, and, as it appears, ought to be admitted as a principle of action.

As to foreign states, they, and consequently the magistrates which preside over them, are under the same obligations as private persons are in respect of each other. Thus, since a private person, in order to obtain his own greatest happiness, even in this world, must obey the precepts of benevolence, piety,

and the moral sense, with an absolute and implicit confidence in them, so states, *i. e.* their governors or representatives, ought to deal with each other according to justice, generosity, charity, &c. even from the mere principle of interest. For the reason is the same in both cases. If individuals be all members of the same mystical body, much more are states, *i. e.* large collections of individuals. They ought therefore to have the same care for each other, as for themselves; and whoever is an aggressor, or injurious, must expect to suffer, as in private life. *They that take the sword shall perish by the sword. He that leadeth into captivity must go into captivity. Babylon must receive double for all her insults upon other nations, &c.* All which is verified by observation, both in regard to private persons, and to states, as far as it is reasonable for us to expect to see it verified in this our ignorance of the real quantities of virtue and vice, and of happiness and misery. But in all observations of this kind we ought constantly to bear in mind, that God's *judgments are unsearchable, and his ways past finding out*, in particular cases, though sufficiently manifest in the general course and tenor of things. By the last he shows us his moral attributes, his providence, and his relation to us as our governor; by the first he humbles the pride, rashness, and self-conceit, of human understanding.

It may not perhaps be improper here to say something concerning the lawfulness of war. Now this regards either the magistrate, or the subject. First, then, it is very evident, that as private persons are, in general, prohibited by the law of Christ to revenge themselves, resist evil, &c., so are states, and, consequently, magistrates. But then as private persons have, under Christianity, that *perfect law of liberty*, a power to punish injuries done to themselves, oppose violence offered to themselves, &c. when their view in this is a sincere regard to others, as affected by these injuries and violences; so magistrates have a power, and by consequence lie under an obligation, of the like kind, where the real motive is tenderness to their own people in a just cause, or a regard to the general welfare of their own state, and the neighbouring ones. Secondly, Though it seems entirely unjustifiable for private persons to enter upon the profession of war wantonly, and with a view to riches, honours, &c., especially since so much violence and cruelty, and so many temptations, attend this profession; yet where a person is already engaged, and has very urgent reasons restraining him from withdrawing, or receives a particular command from a lawful magistrate, it seems to be allowable, or even his duty.

SECT. VII.

OF THE REGARD DUE TO THE PLEASURES AND PAINS OF THEOPATHY, IN FORMING THE RULE OF LIFE.

PROP. LXXI. — *The love of God regulates, improves, and perfects all the other Parts of our Nature; and affords a Pleasure superior in Kind and Degree to all the rest; it is therefore our primary Pursuit, and ultimate End.*

IN what manner the precepts of piety regulate, improve, and perfect the four inferior classes of pleasure, *viz.* those of sensation, imagination, ambition, and self-interest, has been shewn already in this chapter. But the precepts of piety are those which teach us, what homage of our affections, and external actions, ought to be addressed to the Deity in a direct and immediate manner; and it will appear under the two next propositions, in which the affections and actions enjoined by piety are particularly considered, that all these terminate ultimately in the love of God, and are absorbed by it: the love of God does therefore regulate, improve, and perfect all the four inferior classes of pleasure.

The same thing is evident with respect to the whole of our natures, in a shorter manner, and according to the usual sense, in which the phrase of the *love of God* is taken. For the perpetual exertion of a pleasing affection towards a Being infinite in power, knowledge, and goodness, and who is also our friend and father, cannot but enhance all our joys, and alleviate all our sorrows; the sense of his presence and protection will restrain all actions that are excessive, irregular, or hurtful; support and encourage us in all such as are of a contrary nature; and infuse such peace and tranquillity of mind, as will enable us to see clearly, and act uniformly. The perfection therefore of every part of our natures must depend upon the love of God and the constant comfortable sense of his presence.

With respect to benevolence, or the love of our neighbour, it may be observed, that this can never be free from partiality and selfishness, till we take our station in the divine nature, and view every thing from thence, and in the relation which it bears to God. If the relation to ourselves be made the point of view, our prospect must be narrow, and the appearance of what we do see distorted. When we consider the scenes of folly, vanity, and misery, which must present themselves to our sight in this point; when we are disappointed in the happiness of our friends, or feel the resentment of our enemies; our benevolence will begin to languish, and our hearts to fail us; we shall complain of the corruption and wickedness of that world, which we have hitherto

loved with a benevolence merely human; and shew by our complaints, that we are still deeply tainted with the same corruption and wickedness. This is generally the case with young and unexperienced persons, in the beginning of a virtuous course, and before they have made a due advancement in the ways of piety. Human benevolence, though *sweet in the mouth*, is *bitter in the belly*; and the disappointments which it meets with, are sometimes apt to incline us to call the divine goodness in question. But he who is possessed of a full assurance of this, who loves God with his whole powers, as an inexhaustible fountain of love and beneficence to all his creatures, at all times, and in all places, as much when he chastises, as when he rewards, will learn thereby to love enemies, as well as friends; the sinful and miserable, as well as the holy and happy; to rejoice and give thanks, for every thing which he sees and feels, however irreconcilable to his present suggestions; and to labour, as an instrument under God, for the promotion of virtue and happiness, with real courage and constancy, *knowing that his labour shall not be in vain in the Lord.*

In like manner, the moral sense requires a perpetual direction and support from the love of God, in order to keep it steady and pure. When men cease to regard God in a due measure, and to make him their ultimate end, having some other end, beyond which they do not look, they are very apt to relapse into negligence and callosity, and to act without any virtuous principle; and, on the other hand, if they often look up to him, but not with a filial love and confidence, those *weighty matters of the law*, they *tithe mint, anise, and cumin*, and fill themselves with endless scruples and anxieties about the lawfulness and unlawfulness of trivial actions: whereas he who loves God with all his heart, cannot but have a constant care not to offend him, at the same time that his amiable notions of God, and the consciousness of his love and sincerity towards him, are such a fund of hope and joy, as precludes all scruples that are unworthy of the divine goodness, or unsuitable to our present state of frailty and ignorance.

We are next to shew, that the love of God affords a pleasure which is superior in kind and degree to all the rest, of which our natures are capable. Now this will appear,

First, Because *God is light, and in him there is no darkness at all*; because he is *love* itself, such love as quite *casts out all fear*. The love and contemplation of his perfection and happiness will transform us into his likeness, into that image of him in which we were first made; will make us *partakers of the divine nature*, and consequently of the perfection and happiness of it. Our wills may thus be united to his will, and therefore rendered free from disappointments; we shall, by degrees, see every thing as God sees it, *i. e.* see every thing that he has made to be good, to be an object of pleasure. It is true, that all this, in its perfect

sense, in its ultimate ratio, can only be said by way of anticipation: whilst we carry these fleshly tabernacles about with us, we must have crosses to bear, frailties, and thorns in the flesh, to struggle with. But still our strength will at last be made perfect through weakness; and some devout persons appear to have been so far transformed, in this life, as to acquiesce, and even rejoice, in the events of it, however afflicting apparently, to be freed from fear and solicitude, and to receive their daily bread with constant thankfulness, *with joy unspeakable, and full of glory*. And though the number of these happy persons has probably been very small comparatively, though the path be not frequented and beaten; yet we may assure ourselves, that it is in the power of all to arrive at the same state, if their love and devotion be sufficiently earnest. All other loves, with all their defilements and idolatries, will die away in due order and proportion, in the heart which yields itself to God: for they are all impure and idolatrous, except when considered as the methods appointed by God to beget in us the love of himself: they all leave stains; have a mixture of evil as well as of good; they must all be tried and purified by the fire of his love, and pass thereby from human to divine.

Secondly, God is our centre, and the love of him a pleasure superior to all the rest, not only on account of the mixture of pain in all the rest, as shewn in the last paragraph, but also because they all point to it, like so many lines terminating in the same centre. When men have entered sufficiently into the ways of piety, God appears more and more to them in the whole course and tenor of their lives; and by uniting himself with all their sensations, and intellectual perceptions, overpowers all the pains; augments, and attracts to himself, all the pleasures. Every thing sweet, beautiful, or glorious, brings in the idea of God, mixes with it, and vanishes into it. For all is God's; he is the only cause and reality; and the existence of every thing else is only the effect, pledge, and proof, of his existence and glory. Let the mind be once duly seasoned with this truth, and its practical applications, and every the most indifferent thing will become food for religious meditation, a book of devotion, and a psalm of praise. And when the purity and perfection of the pleasures of theopathy, set forth in the last article, are added to their unlimited extent, as it appears in this, it is easy to see, that they must be far superior to all the rest both in kind and degree. We may see also, that the frame of our nature, and particularly its subjection to the power of association, has an obvious and necessary tendency to make the love of God, in fact, superior to our other affections. If we suppose creatures subject to the law of association to be placed in the midst of a variety of pleasures and pains, the sum total of the first being greater than that of the last, and to connect God with each as its sole cause, pain will be overpowered by pleasure, and the indefinite number of compound

pleasures resulting from association be at last united entirely with the idea of God. And this our ultimate happiness will be accelerated or retarded, according as we apply ourselves more or less to the cultivation of the devout affections, to reading, and meditation upon divine subjects, to prayer and praise. Thus we shall the sooner learn to join with the angels, and *spirits of just men made perfect*, in ascribing *power, and riches, and wisdom, and strength, and honour, and glory, and blessing*, and every associated lustre, to their true fountain, *to God and the Lamb*.

Thirdly, As all the other pleasures have a mixture of pain and impurity in them, and are all evidently means, not ends, so are the objects of them frequently taken from us; whereas no time, place, or circumstance of life, can deprive us of—no height, depth, or creature of any kind, can separate us from—the love of God. Our hearts may be turned to him in the greatest external confusion, as well as in the deepest silence and retirement. All the duties of life, when directed to God, become pleasures; and by the same means, every the smallest action becomes the discharge of the proper duty of the time and place. Thus we may redeem our time, and turn it to the best advantage; thus we may convert every situation and event of life into present comfort, and future felicity.

Fourthly, When the love of God is made thus to arise from every object, and to exert itself in every action, it becomes of a permanent nature, suitable to our present frame; and will not pass into deadness, and disgust, as our other pleasures do from repeated gratification.

It is true indeed, that novices in the ways of piety and devotion are frequently, and more experienced persons sometimes, affected with spiritual aridity and dejection; but then this seems to be either from pride, or spiritual selfishness, *i. e.* from the impurity of their love to God. They give themselves up perhaps to raptures, and ecstatic transports, from the present pleasures which they afford, to the neglect of the great duties of life, of charity, friendship, industry; or they think themselves the peculiar favourites of heaven on account of these raptures; and despise and censure others, as of inferior classes in the school of piety. Now these violent agitations of the brain cannot recur often without passing out of the limits of pleasure into those of pain; and particularly into the mental pains of moroseness, jealousy, fear, dejection, and melancholy. Both the greatness and the sameness of the pleasures concur, as in other cases, to convert them into pains. But it does not appear, that those who seek God in all his works, and receive all the pleasures and pains which the order of his providence offers, with thankfulness, and fidelity in their duty, as coming from his hand, would either want that variety, or that temperature, which in our present state is necessary to make the love of God a perpetual fund of joy. And

it seems peculiarly proper to remark here, that if the primitive Christians, instead of retiring into deserts, caves, and cells, for the cultivation of speculative devotion, had continued to shew forth and practise the love of God by exposing themselves to all such difficulties and dangers, as had arisen in the incessant propagation of the everlasting gospel, to *every nation, and kindred, and tongue, and people*, they would perhaps have rejoiced evermore, even in the greatest tribulations, as the apostles, and their immediate followers, who *kept their first love*, seem to have done; also that the present and future generations of Christians can never be delivered from superstitious fears and anxieties, from dryness, scrupulosity, and dejection, till they *go into all the world, and preach the gospel to every creature*, according to our Saviour's last command. However, till this happy time comes, the alloy of the pleasures of theopathy with pain serves to remind us of our fallen state, and of the greatness of our fall, since our primary and purest pleasures are subject to such an alloy; and thus, learning compassion, humility, and submission to God, we shall be exalted thereby, and after we have *suffered a while, be perfected, stablished, strengthened, settled*.

PROP. LXXII. — *To deduce practical Rules concerning the Theopathic Affections, Faith, Fear, Gratitude, Hope, Trust, Resignation, and Love.*

FAITH IN GOD.

THE first of the theopathic affections is faith. *He that cometh to God must believe that he is; and that he is a rewarder of them that diligently seek him.* But this faith is of very different degrees, even in those who equally acknowledge their belief of the existence of God, and agree in their expressions concerning his nature and attributes, according as their ideas of this kind are more or less vivid and perfect, and recur more or less frequently in the events of life. It is probable indeed, that no man, especially in a christian country, can be utterly devoid of faith. The impression made upon us in infancy, our conversation afterwards, the books that we read, and the wonders of the visible world, all concur to generate ideas of the power and knowledge of God at least, and to excite such degrees of fear, as give a reality to the ideas, and extort so much of assent, that the most professed atheists, did they reflect upon what passes in their thoughts, and declare it sincerely, could not but acknowledge, that at certain times they are like *the devils, who believe and tremble*. After these come the persons who dare not but own God in words, who have few or no objections to his nature and attributes, or who can even produce many arguments and demonstrations in favour of them; and yet put away the thoughts of God as much as they are able. The next degree is of such as

try to *serve God and Mammon* together, in various proportions; till at last we come to those, whose *heart is perfect before God*, who love him with all their powers, and *walk in his presence* continually. Now this last state of faith is that which the Scripture puts as equivalent to our whole duty: for in this last state it comprehends, and coincides with, all the other theopathic affections, when they are likewise carried to their ultimate perfection. In their first rise they all differ from one another; in their last state they all unite together, and may be expressed by the name of any single one, when supposed perfect; though the most usual, proper, and emphatic appellation seems to be the phrase of *the love of God*, as before noted. Let us now inquire by what methods men may be most accelerated in their progress from the first dawns of faith in infancy to its ultimate perfection.

First, then, An early acquaintance with the Scriptures, and the constant study of them, is the principal means whereby this faith is first to be generated, and afterwards improved and perfected. God taught mankind before the flood, and for some ages afterwards, his existence, nature, and attributes, by express revelation; and therefore it cannot but be the proper method for begetting faith in children, who are more ignorant, and unqualified for rational deductions, than adults in the rudest ages of the world, to initiate them early in the records of religion. And though afterwards *the invisible things of God* may be known by the visible creation, yet the miracles delivered in the Scriptures have a peculiar tendency to awaken the attention, and to add that force, lustre, and veneration, to our ideas of God, and his attributes, which are the causes and concomitants of assent or faith, according to the theory of these papers. The same thing holds of the prophecies, precepts, promises, and threatenings of the Scriptures, in their respective degrees; and it seems, in a manner, impossible for any one to be perpetually conversant in them, without this happy influence. All those persons therefore, who are so far advanced in faith, as to cry out with the father of the lunatic in the gospel, *Lord, I believe; help thou my unbelief*; ought, in consequence of this prayer, to apply themselves to the daily study of, and meditation upon, the Scriptures. To which it is to be added, that as faith in Christ is also necessary, as well as faith in the one God and Father of all, and can be learnt no other way than from the Scriptures, we ought upon this account also to esteem them as the principal means, which God has put in our power, for the generation and improvement of our faith: *faith cometh by hearing, and hearing by the word of God*.

Secondly, To the study of the word of God must be joined that of his works. They are in all things analogous to each other, and are perpetually comments upon each other. I do not mean that a man must be a deep philosopher, in order to have faith in God; for, on the contrary, philosophical researches,

when pursued from curiosity or ambition, are *vain deceit*, and lead people to *make shipwreck of faith*. I would only recommend to every person, according to his knowledge and abilities, to consider the works of God as his works; to refer all the power, wisdom, and goodness in them to Him, as the sole fountain of these; and to dwell upon the vastness, the lustre, the beauty, the beneficence, which are obvious to vulgar as well as philosophic eyes, till such time as they have raised devotion in the heart. Such exercises would greatly assist to overcome that gloominess and scepticism, which sometimes hang about our conceptions of the invisible world, and by their reiterated impressions generate the causes of assent. We have examples of this in the Old Testament, particularly in the Psalms; and the writers do not seem to have been eminent for any peculiar depth in curious inquiries. Men of the ordinary ranks in life in these times have as much probably of the mysteries of nature unfolded to them, as great saints in ancient times; so that they want nothing to enable them to draw the same faith and devotion from the works of creation, but the same earnest desire to do it.

Thirdly, An upright heart, and a sincere endeavour to do our whole duty, are necessary to support our faith after it is generated. While any sin remains unconquered, while there are any secret misgivings, the idea of God will be so uneasy to the mind, as not to recur frequently; men will seek for refuge in vain amusements; and the false hopes of this world will exclude the real ones of another, and make religion appear like a dream. This is the case with far the greatest part of mankind; they *live rather by sight than faith*; and are not sufficiently aware, that a *little leaven leavens the whole lump*, and that one favourite pursuit of this world totally eclipses those glories of the other, that sight of *the invisible God*, which the *pure in heart*, like Moses, are favoured with. The same partiality of our obedience and devotion is the cause that the writings of the Old and New Testaments do not at once convince all, who peruse them, of their divine authority, and of the consequent truth of revealed religion. We judge of the frame of men's minds by that of our own, as appears from the theory of association; and whatever differs in a great degree from our own, puts on the appearance of something romantic and incredible. This is evident in the daily intercourses of human life. Corrupt and designing men put the falsest and most unnatural constructions upon the actions of the bulk of mankind, and often deceive themselves thereby; and the bulk of mankind are quite at a loss to conceive and believe the possibility of very heroic, generous, pious actions. And thus profane men turn into ridicule passages in the Scriptures, which demand the highest admiration and applause; and men of inferior degrees of goodness, though they do not assent to this, are a little staggered at it. But they who *will do the will of God*, will soon perceive the *doctrine* of the Scriptures to be *from him*; they who will

press forward to the perfection of Moses, Daniel, St. Peter, or St. Paul, will not only acquit them readily of the charge of enthusiasm and imposture, but will also see and feel experimentally such unquestionable criterions of truth, such a reality, in their words and actions, as will dispel all the mists of scepticism and infidelity, with regard either to natural or revealed religion.

It is much to be wished, that these things were seriously weighed, and laid to heart, by those half-pious persons, who abstain from gross sins, and *seek, though they do not strive, to enter in at the strait gate, who are not far from the kingdom of God.* These persons might, by a little more attention to the word and works of God in a practical way, and *casting away the sin that does most easily beset them,* not only arrive at that *full assurance of faith,* which is our greatest happiness in this world, and the earnest of an eternal crown hereafter, but also *let their light so shine before men, as that they, seeing their good works, would glorify their Father, which is in heaven.*

THE FEAR OF GOD.

The immediate consequence of faith in God, in its imperfect state, is fear. And though love does arise also, yet it is faint and transient for a long time, whereas the fear is strong and vivid, and recurs generally with every recollection of the divine attributes. The cause of all this is unfolded in these papers. For, fear being the offspring of bodily pain, and this being much more acute than bodily pleasure, the parent of love, it follows that fear must, in general, be stronger than love in their nascent state. The august ideas of infinite time and space, of the glories of heaven, and the torments of hell, of the great works of the creation, &c. which accompany the idea of God, farther contribute to agitate the mind, and to carry it within the limits of pain or fear. At the same time we see, that these terrifying ideas, when mixed with those which generate love, and moderated by frequent recurrency, and other means, so as to fall back within the limits of pleasure, must greatly increase our love, and other pleasing affections, exerted towards the Deity. We are to inquire therefore, both how the fear of God may most effectually be generated, and how it may be converted most speedily into love and delight in God. And the answer will be, that we must make use of the means before recommended for the generation and increase of faith, *viz.* the study of the word and works of God, and a sincere endeavour to discharge the whole of our duty.

That the last is necessary to keep up the fear of God, may appear, inasmuch as those who continue to disobey, must, by degrees, fall into insensibility and callosity; the frequent returns of the ideas of guilt and fear make them sit easier upon the

mind, at the same time that the remaining uneasiness keeps these ideas, with all their associates, out of view, in a great measure, as has been mentioned already.

GRATITUDE TOWARDS GOD.

Gratitude or thankfulness to God arises from the recollection of benefits received, just as that to men. And if we could see and feel practically and perpetually, that God is the sole spring of all action, our gratitude to God would absorb all kinds and degrees of it paid to men. Could we also look with the eye of faith into futurity, and be convinced really, that *eye hath not seen, nor ear heard, neither hath it entered into the heart of man to conceive, what things God has prepared for such as love him*; that *all things work together for their good*, trials and afflictions as much or more than any thing else; that every creature shall love, and bless, and praise God at last, and every one partake of the happiness of all the rest, whilst yet we all, who are thus heirs of an excess of glory, perfection, and happiness, are creatures of yesterday, called forth from nothing by God's almighty word; if, farther, we consider, that the Son of God became flesh, took our infirmities and sorrows, and at last died for us, God condescending thus to recommend and evidence his infinite love to us; our hearts could not but overflow with such gratitude, as even to overpower our faith for a while. We should then acknowledge, that all we are, and have, and hope for, are from him; we should praise him for all the blessings past, present, and future, which we receive in our own persons, or in those of our fellow-creatures; and desire nothing so ardently, as to be admitted into his presence, and the society of those happy beings, who rest not day and night, saying, *Holy, Holy, Holy, Lord God Almighty, which was, and is, and is to come.*

HOPE AND TRUST IN GOD, AND RESIGNATION TO HIS WILL.

Hope and trust in God differ only in degree, the last being a firmer hope, and, as it were, an assurance of the favour of God to ourselves in particular; and that he will provide for all our wants. Resignation is the same hope and trust exerted, notwithstanding that present appearances may be contrary thereto: it is the submission of our own wills and judgments to God's, with an entire confidence in his care and goodness. Let us endeavour to place this hope, trust, and resignation, upon a sure foundation, laid in the word and works of God.

First, then, The Scriptures give the strongest and plainest assurances, that all those who love and obey God here, will be admitted to pure, exalted, and eternal happiness at the expiration of this life. If therefore *our hearts do not condemn us, we may have this confidence in him*; we may have an entire hope and trust

in him, as to the most weighty of all points, our eternal salvation. And though natural reason could not have discovered this inestimable hope to us, though it was not able to *bring life and immortality to light*, Christ being the only *sure and stedfast anchor* of that hope, which reaches *beyond the veil* of death; yet it readily concurs with all the Scripture declarations of this kind, and even affords a comfortable probability of itself, after we have once been enlightened by revelation.

Secondly, The Scriptures, the voice of reason, and careful observation, all concur to assure us, that a secret providence attends upon the good; protects and blesses them in the events of the present life, ordinary and extraordinary; delivers them in great trials and afflictions; and disposes every incident and circumstance in such a manner, as they would wish and desire for themselves, could they judge aright, and take the whole of things into their view. Now the full persuasion of this would be a most endearing motive to trust and confidence in God. For the things of this life, however inconsiderable when compared to those of another, do most sensibly affect even good men; and, till they can arrive at a due indifference to this world, it is highly requisite, that they should turn their excess of sensibility into a motive to gratitude and trust.

Thirdly, The assurance that all our afflictions are the chastisements of our heavenly Father, and equally productive of happiness with the other events of our lives, as mentioned in the last paragraph, enables us to resign ourselves. The highest act of this kind is, for the most part, in the article of death, when we are surrounded with infirmity, pain, and darkness, and when all inferior comforts must be given up. Now this theopathic affection of resignation, though it is in its first state painful, and difficult to corrupt nature; yet in its progress it becomes easy, and at last affords the deepest peace and satisfaction. By resigning all, we are delivered from every anxiety and inquietude, and enter upon the next period of our existence with an impartiality and freedom, that qualify us to enjoy whatever the order of Providence bestows. And unless we were exercised with some trials and temptations of this kind, unless our wills were sometimes disappointed, we should at last be swallowed up by mere wilfulness, and pursue every object of desire with an unconquerable eagerness and obstinacy: we should also idolize ourselves, as the authors of our success and blessings; or, at the utmost, should look no farther than the course of nature, and blind unmeaning fate; whereas by learning a ready compliance with the will of God, however unexpected, we become partakers of his happiness; for his will can never be disappointed.

Fourthly, Those persons who believe the goodness of God, according to the third of the suppositions before-mentioned, *i. e.* who believe that he will advance all his creatures to unlimited happiness ultimately, may much more easily resign themselves

to God, in all respects, spiritual as well as temporal, on that account. But it appears, that very pious persons have an entire resignation without any distinct conception or belief of this hypothesis. They know and feel, as it were, that God is infinitely good, and that *the Judge of all the earth must do right*; and, in this confidence, they leave the mysteries of his Providence, his unsearchable judgments, to be unfolded in his own time, preserving themselves from disquietude by an humble religious scepticism. But if it should please God to display the riches of his mercy in the full discovery and establishment of the doctrine of universal restoration, in the latter times, which are now approaching, it will become us first to receive it with the highest gratitude, and then to use it as a means of accelerating our progress towards the absolute resignation of ourselves, and all our fellow-creatures, into the hands of God.

Fifthly, As the considerations contained in the four last paragraphs may contribute to beget hope, trust, and resignation in us, so all the foregoing theopathic affections, and particularly gratitude, with all the means of obtaining them, conspire to the same purpose, as will be easily seen.

THE LOVE OF GOD.

The love of God may be considered as the last of the theopathic affections, as before remarked; for they all end in it, and it is the sum total of them all. In its first rise, it must, like all the rest of them, resemble the sympathetic one of the same name; and thus it differs from the rest in *their* first rise, and is, as it were, contrary to fear. In its first rise it is often tinctured with fondness and familiarity, and leans much towards enthusiasm; as on the other hand, the fear is often at first a slavish superstitious dread. By degrees the fear and love qualify each other; and, by uniting with the other theopathic affections, they all together coalesce into a reverential, humble, filial love, attended with a peace, comfort, and joy, that pass all belief of those who have not experienced it; so that they look upon the discourses and writings of those who have, to be either hypocrisy, or romantic jargon. The book of Psalms affords the sublimest and most correct expressions of this kind, and can never be too much studied by those who would cherish, purify, and perfect in themselves a devout frame of mind. And this single circumstance, exclusive of all other considerations, appears to me a most convincing proof of the divine authority of this book, and consequently of the rest of the books of the Old and New Testament. But they have all the same evidence in their favour, in their respective degrees; they are all helps to beget in us the love of God, and tests whether we have it or no; and he who *meditates day and night in the law of God*, joining thereto the practical contemplation of his works, as prescribed by the Scrip-

tures, and the *purification of his hands and heart*, will soon arrive at that devout and happy state, which is signified by the love of God. I will here add some practical consequences resulting from what has been advanced concerning the theopathic affections.

First, then, Though an excess of passion of every kind, such as is not under the command of the voluntary power, is to be avoided, as dangerous and sinful; yet we must take care to serve God with our affections, as well as our outward actions; and indeed, unless we do the first, we shall not long continue to do the last, the internal frame of our minds being the source and spring from whence our external actions flow. God, who gives us all our faculties and powers, has a right to all; and it is a secret disloyalty and infidelity, not to pay the tribute of our affections. They are evidently in our power, immediately or mediately; and therefore he who goes to his profession, occupation, or amusements, with more delight and pleasure than to his exercises of devotion, his reading and meditation upon divine subjects, and his prayers and praises, whose *soul is not athirst for the living God*, and *the water of life*, may assuredly conclude, that he is not arrived at the requisite degree of perfection; that he still hankers after *mammon*, though he may have some real desires, and earnest resolutions, with respect to God.

Secondly, Though this be true in general, and a truth of the greatest practical importance; yet there are some reasons, in which all the theopathic affections, and many in which those of the delightful kind, are languid, and that even in persons that are far advanced in purity and perfection. Thus the enthusiastic raptures, which often take place in the beginning of a religious course, by introducing an opposite state, disqualify some; a Judaical rigour and exactitude in long exercises, bodily disorders, &c.; others, from feeling God to be their present joy and comfort. So that the fervours of devotion are by no means in exact proportion to the degree of advancement in piety; we can by no means make them a criterion of our own progress, or that of others. But then they are always some presumption; and it is far better, that they should have some mixture even of enthusiasm, than not take place at all. As to those who are in the dry and dejected state, the fear of God is, for the most part, sufficiently vivid in them. Let them therefore frequently recollect, that the fear of God is a scripture criterion and seal of the elect, as well as love. Let them consider, that this trial must be submitted to, as much as any other, till *patience have her perfect work*; that it is more purifying than common trials; that the state of fear is far more safe, and a much stronger earnest of salvation, than premature and ecstatic transports; and that, if they continue faithful, it will end in love, probably during this life, certainly in another. Lastly, that no feeble-minded person may be left without comfort, if there be any one who doubts whether

he either loves or fears God, finding nothing but dulness, anxiety, and scrupulosity, within him, he must be referred to his external actions, as the surest criterion of his real intentions in this confused and disorderly state of the affections: and at the same time admonished not to depend upon his external righteousness, which would breed an endless scrupulosity, and an endeavour after an useless exactitude, but to take refuge in the mercy of God through Jesus Christ.

Lastly, The cultivation of the love of God in ourselves by the methods here recommended, and all others that suit our state and condition, with a prudent caution, to avoid enthusiasm on one hand, and superstition on the other, is the principal means for preserving us from dejection of every kind, and freeing us, if we be fallen into it. Worldly sorrows must by degrees die away, because worldly desires, their sources, will. And this progress will be much accelerated by the impressions of a contrary nature, which gratitude, hope, love towards God, will make upon the mind. As to the dejection which relates to another world, it generally ends, as has been frequently remarked already, in the opposite state, being its own remedy and cure; but all direct endeavours after the true and pure love of God must assist. It is much to be wished, that low-spirited persons of all kinds would open themselves without reserve to religious friends, and particularly to such as have passed through the same dark and dismal path themselves, and, distrusting their judgments, would resign themselves for a time to some person of approved experience and piety. These would be like guardian angels to them; and as our natures are so communicative, and susceptible of infection good and bad, they would by degrees infuse something of their own peaceable, cheerful, and devout spirit into them. But all human supports and comforts are to be at last resigned; we must have *no Comforter, no God, but one*; and happy are they who make haste towards this central point, in which alone we can *find rest to our souls*.

SCHOLIUM.

If we consider the love of the world, the fear of God, and the love of God, in the first ratio which they bear to each other, it will appear, that the love of the world is infinitely greater than the fear of God, and the fear infinitely greater than the love; so that the fear of God is a middle proportional between the love of the world and the love of God, in the first or nascent ratio of these affections. In like manner, if we take their last ratio, or that in which the love of the world, and the fear of God, vanish into the love of God, the love of the world will be infinitely less than the fear of God, and the fear infinitely less than the love; so that the fear of God will still be a middle proportional between the love of the world and the love of God. Let us suppose the fear

of God to be a middle proportional between the love of the world and the love of God in all the intermediate states of these affections, from their first rise in infancy, till their ultimate absorption and evanescence in the love of God, and see how this supposition will tally with experience, and how each affection varies in respect of the other two. Call therefore the love of the world W , the fear of God F , and the love of God L . Since then $W : F :: F : L$,

$$W = \frac{F^2}{L}. \quad \text{If now } F \text{ be supposed to remain the same } W :: \frac{1}{L}, \text{ i. e.}$$

every diminution of the love of the world will increase the love of God, and *vice versa*; so that, if the love of the world be nothing, the love of God will be infinite, also infinitely greater than the fear, *i. e.* we shall be infinitely happy. If, on the contrary, the love of the world be greater than the love of God, the fear will also be greater than it, and our religion be chiefly anxiety and superstition. If, farther, F , supposed still to remain the same, be greater than W , it is our truest interest to diminish W as much as we can, because then the gain in L is far greater than the loss in W . If L remain the same, then $W = F^2$, *i. e.* every increase of W will increase F also, *i. e.* every increase of the love of the world will increase the fear of God, which therefore, since the love is not increased by supposition, must incline to a superstitious dread: as, on the contrary, if W vanishes, F must vanish also, *i. e.* the love of the world and fear being both annihilated, we shall receive pure happiness of a finite degree, from the love of God. If W remain the same, then $F^2 :: L$, *i. e.* every accession made to the fear of God will be the cause of a greater accession to the love, and every accession to the love the cause of only a less accession to the fear, *i. e.* we shall be gainers upon the whole by all motives either to the fear or love of God, losers by all contrary motives. For if F be supposed even infinite, L will be infinito-infinite, *i. e.* will absorb it infinitely; and if F be infinitesimal, L will be infinito-infinitesimal, *i. e.* we shall become mere selfish worldlings, which is the case with those practical atheists, who succeed in their endeavours to put God, and a future state, out of their thoughts, that they may give themselves up to this world. W now occupies the place of L , and extinguishes both F and it; *i. e.* self and the world are their god. Upon the whole, it follows from this speculation, concerning the quantities W , F , and L , that W ought to be diminished, and F and L to be increased, as much as possible, that so W may be indefinitely less than F , and F indefinitely less than L ; *i. e.* we ourselves indefinitely happy in the love of God, by the previous annihilation of self and the world. And it may not perhaps be quite unuseful to have represented this most important of all conclusions, with the steps that lead to it, in this new and compendious light.

PROP. LXXIII.—*To deduce practical Rules concerning the Manner of expressing the Theopathic Affections by Prayer, and other religious Exercises.*

THERE cannot be a more fatal delusion, than to suppose, that religion is nothing but a divine philosophy in the soul; and that the foregoing theopathic affections may exist and flourish there, though they be not cultivated by devout exercises and expressions. Experience, and many plain obvious reasons, shew the falsehood and mischievous tendency of this notion; and the theory of these papers may furnish us with other reasons to the same purpose, of a deeper and more subtle nature. It follows from this theory, that no internal dispositions can remain long in the mind, unless they be perpetually nourished by proper associations, *i. e.* by some external acts. This therefore may be considered as a strong argument for frequent prayer.

But, secondly, Though God be in himself infinite in power, knowledge, goodness, and happiness, *i. e.* acquainted with all our wants, ready and able to supply them, and incapable of change through our entreaties and importunities; yet, as he represents himself to us both in his word and works in the relation of a father and governor, our associated nature compels us, as it were, to apply to him in the same way as we do to earthly fathers and governors; and, by thus compelling us, becomes a reason for so doing. If God's incomprehensible perfection be supposed to exclude prayer, it will equally exclude all thoughts and discourses concerning him; for these are all equally short and unworthy of him; which is direct atheism.

Thirdly, Though the hypothesis of mechanism may seem at first sight to make prayer superfluous and useless; yet, upon farther consideration, it will be found quite otherwise. For if all things be conducted mechanically, *i. e.* by means; then prayer may be the means of procuring what we want. Our ignorance of the manner in which things operate, is not the least evidence against their having a real operation. If all be conducted mechanically, some means must be made use of for procuring our wants. The analogy of all other things intimates, that these means must proceed in part from man. The analogy taken from the relations of father and governor suggests prayer. It follows therefore, according to the mechanical hypothesis, that prayer is one of the principal means whereby we may obtain our desires.

Fourthly, If all these reasons were set aside, the pressing nature of some of our wants would extort prayers from us, and therefore justify them.

Fifthly, In like manner, the theopathic affections, if they be sufficiently strong, will break forth into prayers and praises, as in the authors of the Psalms, and other devout persons.

Lastly, The Scriptures direct and command us to pray, *to pray*

always, in every thing to give thanks; and support the foregoing and such like reasons for prayer and praise. And this removes all doubt and scruple, if any should remain, from the infinite nature and majesty of God. We may be satisfied from the Scriptures, that we have the privilege to pray, to expose all our wants, desires, joys, and griefs, to our Creator; and that he will hear us, and help us.

As to the time, manner, and requisites of prayer, we may make the following observations.

First, That words are of great use in the most private prayer, because of the associations transferred upon them, and which therefore they excite in the mind. But then, as there are internal sentiments and combinations of these, to which no words can correspond, we must not confine the noble privilege of prayer and praise to our languages, which are the offspring of the confusion at Babel. There are therefore proper seasons and occasions for mental prayer, for the tendency and aspiration of the heart to God without words, as well as for vocal prayer. And indeed all private vocal prayer seems to admit of, and require mental prayer, at short intervals, in order to fix our attention, and exalt our affections, by giving scope to the secondarily automatic workings of a devout heart.

Secondly, Forms of prayer, composed by persons of a devout spirit, are of use to all at certain times for assisting the invention, and exciting fervency; and in the beginning of a religious course they seem to be necessary, as they certainly are for children. But it would be a great hindrance to the growth and perfection of our devotion, always to keep to forms. The heart of every particular person alone knows its own bitterness, its desires, guilt, fears, hopes, and joys; and it will be impossible to open ourselves without reserve, and with a filial love and confidence in God, unless we do it of ourselves, in such words as the then present state of mind, when under a vigorous sense of the divine presence, shall suggest.

Thirdly, A regularity as to the times of private devotion helps to keep persons steady in a religious course, and to call them off again and again from pursuing and setting their hearts upon the vanities of the world. And we may affirm in particular, that the morning and evening sacrifice of private prayer and praise ought never to be dispensed with, in ordinary cases, not even by persons far advanced in the ways of piety. It seems also very consonant to the true spirit of devotion, to have set hours of prayer in the course of the day, as memorials and means of begetting the spirit, which, however, cannot be observed by the bulk of the world with exactness. Lastly, it will be of great use to accustom ourselves to certain ejaculations upon the various particular occasions that occur in the daily course of each person's business and profession. It is true indeed, that all these rules are of the nature of Judaical rites and ceremonies; but then let

it be considered, that even in christian countries every man must be a Jew in effect, before he can arrive at christian liberty, and be able to worship God *in spirit and in truth*, and indeed in order to arrive thither. Times, forms, and rules of devotion, are schoolmasters that serve to bring us to Christ. As for those persons who are so far advanced, as to walk with God continually, who sanctify the minutest actions by a perpetual dedication of them to God, I do not presume to instruct them. *Their anointing teaches them all things.*

Fourthly, The matter of our prayers must be different, according to the state that we are in; for in prayer we ought always to lay our real case, whatever it be, before God. Confession of sins, and petition for graces, are the most useful and requisite for young penitents, and must always have a considerable share in those who are farther advanced. But when the heart overflows with joy and gratitude to God, and tender love to others, which is more frequently the case with those who have *kept their first love* for some time, it is easy to see, that praise and intercession must be most natural and suitable. Temporal wants ought not to be forgotten. We are to acknowledge God in every thing; consider him as our father, and only friend, upon all occasions; place no confidence in our own wisdom or strength, or in the course of nature; have moderate desires, and be ready to give up even these. Now prayer, with express acts of resignation, in respect of external things, has a tendency to beget in us such dispositions. However, I do not extend this to such persons as are resigned to God in all things, temporal and spiritual, for themselves as well as for others, who, desiring nothing but that the will of God may be done, see also that it is done, and acquiesce and rejoice in it.

Fifthly, Prayer must always be accompanied by faith; *i. e.* we must not only look up to God, as our sole refuge, but as an effectual one. He that believes the existence and attributes of God really and practically, will have this entire confidence, so as to be assured, that the thing desired of God will be granted, either precisely as desired, or in some way more suitable to his circumstances; an act of resignation being here joined to one of faith. How far our Saviour's directions concerning faith in prayer are an encouragement and command to expect the precise thing desired, is very doubtful to me. However, we may certainly learn from his example, that resignation is a necessary requisite in prayer: that we ought always to say, *Nevertheless not my will, but thine be done.*

Sixthly, Public prayer is a necessary duty, as well as private. By this we publicly profess our obedience to God through Christ; we excite and are excited by others to fervency in devotion, and to christian benevolence; and we have a claim to the promise of Christ to those who are assembled together in his name. The christian religion has been kept alive, as one may say, during the

great corruption and apostasy, by the public worship of God in churches; and it is probable, that religious assemblies will be much more frequent than they now are, whenever it shall please God to put into the hearts of Christians to proceed to the general conversion of all nations. We ought therefore to prepare ourselves for, and hasten unto, this glorious time, as much as possible, by joining together in prayers for this purpose; and *so much the more, as we see the day approaching.*

Lastly, Family prayer, which is something between the public prayers of each church, and the private ones of each individual, must be necessary, since these are. The same reasons are easily applied. And I believe it may be laid down as a certain fact, that no master or mistress of a family can have a true concern for religion, or be a child of God, who does not take care to worship God by family prayer. Let the observation of the fact determine.

SECT. VIII.

THE REGARD DUE TO THE PLEASURES AND PAINS OF THE MORAL SENSE IN FORMING THE RULE OF LIFE.

PROP. LXXIV.—*The Moral Sense ought to be made the immediate Guide of our Actions on all sudden Emergencies; and therefore its Pleasures may be considered as making Part of our primary Pursuit.*

IN deducing rules for social conduct above, I laid down the moral sense as one, which ought to have great influence in the most explicit and deliberate actions. Now this is, in some measure, sufficient to prove, that its pleasures make part of our primary pursuit. I here propose to shew, that the moral sense ought not only to have some, but the sole influence, on emergent occasions; and this will be a farther recommendation of its pleasures.

That the moral sense is such an immediate guide, will appear for the following reasons.

First, Because it offers itself in the various occurrences of life, at the same time producing its credentials. For it warns us before-hand, and calls us to account afterwards; it condemns or acquits; it rewards by the pleasures of self-approbation, or punishes by the pains of self-condemnation. It appears therefore with the authority of a judge, and also of one who knows the heart; and, by consequence, it claims to be God's vicegerent, and the forerunner of the sentence which we may hereafter expect from him.

Secondly, The moral sense is generated chiefly by piety, benevolence, and rational self-interest; all which are explicit guides of life in deliberate actions. Since therefore these are excluded on sudden occasions, through the want of time to weigh and determine, it seems highly reasonable to admit the moral sense, which is their offspring, and whose dictates are immediate, for their substitute.

Thirdly, The greatness, the permanency, and the calm nature of the pleasures of the moral sense, with the horrors, and constant recurrency, of the sense of guilt, are additional arguments to shew, that these pleasures and pains were intended for the guides of life, and the pleasures for a primary pursuit.

Fourthly, The mechanical generation of the pleasures and pains of the moral sense may by some be thought an objection to the reasoning here used; but it will appear otherwise upon due consideration. For all the things which have evident final causes, are plainly brought about by mechanical means; so that we may argue either way, *viz.* either from seeing the mechanical means, to the existence of a final cause, not yet discovered; or from the existence of a final cause, to that of the mechanical means, not yet discovered. Thus a person who should take notice, that milk always appeared in the breasts of the dam at the proper season for the young animal, might conclude that this was effected mechanically; or, if he first saw that milk must be brought mechanically into the breasts, soon after the birth of the young, he might conclude that this milk would be of some use; and, from a very little farther recollection, might perceive that it was for the nourishment of the new-born animal. In like manner, if any one sees, that a power, like that of conscience, must be generated in the human mind, from the frame of it, compared with the impressions made upon it by external objects, he may be assured that this power must have some use; and a very little reflection upon the divine attributes, and the circumstances of mankind, will shew that its peculiar use must be that of a guide and governor.

If we could suppose the moral sense to be either an instinct impressed by God, or the necessary result of the eternal reasons and relations of things, independent of association, it ought still to be considered as a guide of life. For since the favourers of each of these suppositions maintain, that the moral sense is entirely coincident with the precept of benevolence and piety; it must, according to them, be made their substitute upon emergent occasions.

PROP. LXXV.—*To deduce practical Rules for the Regulation and Improvement of the Moral Sense.*

THERE are three things principally necessary in the conduct of the moral sense. First, That it extend to all the actions of

moment, which occur in the intercourses of human life; and be a ready monitor to us on such occasions. Secondly, That it should not descend to minute and trifling particulars; for then it would check benevolence, and turn the love of God into a superstitious fear. And, thirdly, That its informations be in all cases agreeable to piety and benevolence, whose substitute it is.

Now it will be easily seen, that for the right conduct of our moral sense in all these particulars, it will be necessary for us to be much employed in the practical study of the Scriptures, and of the writings of good men of all denominations, in observing the living examples of such, in calling ourselves to account frequently, in prayer, and other exercises of devotion, in endeavouring to convert all the sympathetic and theopathic affections into the love of God, in aiming at a truly catholic and charitable spirit, and in walking faithfully, according to the dictates of benevolence, piety, and the moral sense, such as they are at present. For *to him that hath shall be given, and he shall have abundance.* Some of these directions are more particularly suited to correct one defect in the moral sense, some another; but they will all conspire in purifying and perfecting it.

GENERAL COROLLARIES OF THE LAST SEVEN SECTIONS.

COR. I. WE may now, by reviewing the seven last Sections, judge how much the christian morality is superior to the pagan in sublimity and purity. The pagan morality was comprehended under the four cardinal virtues of prudence, justice, fortitude, and temperance; and these were so explained and understood by the pagans, as to omit many necessary christian virtues, and allow, or even recommend, some great enormities. I will class a few particulars of this kind under the respective heads of sensation, imagination, ambition, self-interest, sympathy, theopathy, and the moral sense.

The pagan virtue of temperance prohibited all gross excesses in eating and drinking, and many acts of lewdness. But it fell far short of the christian precepts, in regard to the external actions; and seems no ways to have extended to the regulation of the thoughts.

The pagan fortitude enjoined great patience and perseverance in difficulties, pains, and dangers. But it was, in part, founded in pride; and so was opposite to the christian fortitude, whose strength lies in its weakness, in a diffidence in ourselves, and confidence in God. And how much the Christian was superior in degree, as well as kind, may appear from the examples of the

martyrs and confessors in the primitive times, who were of all ranks, professions, ages, and sexes, and of innumerable private persons in the present as well as all past ages of the church, who are able to *rejoice in tribulation*, and to do all things, through Christ that strengtheneth them. They do not make a show of themselves to the world; that would be ostentation, and vain-glory: but those who desire to be animated by, and to imitate, such living examples, may find them in every christian country in the world.

As to the pleasures of imagination, there seems to have been no restraint laid upon them by the pagan morality. Curiosity, and the study of the arts and sciences for their own sakes, were even recommended.

Ambition was, in like manner, esteemed virtuous; and many kinds and degrees of humility were treated with reproach and contempt.

Gross self-interest was allowed in a much greater degree by the pagans, than it is amongst Christians. The pagans scarce knew what refined self-interest was; and they did not at all apprehend, that any objection lay against rational self-interest, or that a purer motive to action was necessary.

Their benevolence was chiefly a love of relations, benefactors, and their country. They fell far short of universal unlimited benevolence, equal to self-love; and they allowed and even recommended, taking vengeance on enemies, as an heroic, noble action.

As to the theopathic affections of faith, fear, gratitude, hope, trust, resignation, and love, with the expressions of these in prayer and praise, they knew nothing of them in general. Polytheism, and impure notions of their deities, had quite depraved and starved all their theopathic affections. They were destitute of love, and their fear was superstition.

Lastly, The consequence of all this must be, and accordingly was, a proportional imperfection in the moral sense. It was deficient in most things, erroneous in many, and needlessly scrupulous in some. It occupied the place of the Deity; for the best amongst the pagans idolized the innate sense of *honesty*, and the independent power of the mind, the *sensus honesti*, and the *τὸ ἐφ' ἡμῖν*.

I do not deny but that some heathen moralists may now and then have expressed themselves in a manner superior to what I have here described. But I speak of the general tenor of their writings, and desire that they may be compared with the general tenor of the Scriptures, of the fathers, and of the christian divines of all ages.

COR. II. By a like review of the seven last sections, we may discern more clearly and fully the relative nature of the virtues and vices, which has been already taken notice of; and thus both learn to be more candid and charitable in our judgments on the

actions of others, and more earnest and unwearied after perfection in ourselves.

COR. III. Since it now appears fully, that the pleasures and pains of the four first classes are to be subjected to those of the three last, *i. e.* the pleasures of those foregone, and the pains excepted; whereas the pleasures of these are to be chosen, and the pains avoided; I will here give, in one view, some principal motives to engage us thus to regulate our affections and actions.

First, then, The great composure and peace of mind, which those persons enjoy, who make benevolence, piety, and the moral sense, the rule of their lives, is a strong inducement to us to imitate their example. As we desire to learn all other arts from those who practise them in the greatest perfection, so ought we the art of living. The persons in whom this peace is most observable, were the authors of the books of the Old and New Testaments; and these books may be distinguished from all other books by this remarkable circumstance, that the authors appear to have been quite free from that dissatisfaction, doubt, care, and fear, which are so obvious in the discourses and writings of other persons. However, the same thing appears, in a less degree, in the discourses of all good men, even heathens; as in the discourses of Socrates preserved by Plato and Xenophon; and may be observed in the conduct and behaviour of all such, by those who are conversant with them. Eminently pious and benevolent persons seem to be in possession of some great secret, some *Catholicon*, or philosopher's stone. They pass through life unhurt, as to the peace of their minds, by the evils of it; and find abundant matter for praise and thanksgiving to God in it. All which appears to be owing to their being guided by the true principles of action.

Secondly, Death is certain, and necessarily attended with many terrifying associations; and a future state must, even upon the slightest presumption of its reality, be a matter of the greatest concern to all thinking persons. Now the frequent recurrency of these fears and anxieties must embitter all guilty pleasures, and even the more innocent trifling amusements; which, though not glaringly opposite to duty, are yet beside it, and foreign to it. And thus men live in bondage all their lives through the fear of death; more so than they are aware of themselves (for men often neglect the fair examination of themselves, so much as not to know their real state, though obvious enough upon a due inquiry); and still much more so than they own and express to others. But nothing can deliver men from this great evil, besides entire rectitude of heart. While there is a consciousness of any wilful failure, of any unfairness, of prevarication with God, or a desire and design to deceive one's self, the terrors of religion rage with greater fury than in a state of utter negligence, and disregard to duty. A man cannot rest, while he is double-minded, while he strives and hopes to serve God and

mammon together; but must either go forward in order to obtain true lasting peace, or backward to infatuate and stupify himself. And this helps us to account for the foregoing observation on the behaviour of truly good men.

Thirdly, It appears from the very frame of our natures, that we are not qualified for any great degrees of happiness here, nor for an uninterrupted continuance of any degree, nor for the frequent returns of any particular pleasure, bodily or mental. From all which it will follow, that a general hope, mixed with the cares, fears, and sorrows of compassion and contrition, is the only pleasure that is attainable, lasting, or suitable, to our present circumstances.

Fourthly, Besides the fears relating to death, and a future state, all persons who serve the world, must have very great ones in respect of the things of the world. A man must be *crucified to the world*, before his heart can be at ease concerning its pleasures, honours, and profits. And as our pains are, in general, more exquisite than our pleasures; so is fear, worldly fear, the offspring of the first, greater in degree than worldly hope, the offspring of the last; and if it recur often, will overbalance it; and must make a great deduction, upon all suppositions. Now, devotion to God, though it does lessen the hopes of this world, as well as the fears; yet it seems to lessen the fears in a much quicker ratio; however, it certainly takes off their edge, and leaves so much hope and pleasure, as to be a foundation for the duty of thankfulness to God.

Fifthly, An upright heart is necessary to our having a real influencing sense and conviction of the divine amiableness and benevolence, and consequently, to our peace and comfort. When any dread, or slavish fear, attends the conception of the divine nature, a man can never think himself safe; but will always have anxieties and misgivings. And our ideas of God must always be thus tainted with superstition, whatever our theory be, if our hearts be not right before him. We shall weakly and wickedly suppose and fear, that he *is such a one as we ourselves are*, whatever declarations we make, whatever demonstrations we possess to the contrary. And as this cannot but cast a gloom upon the whole course of nature to the wicked, so the contrary persuasion is the principal source of joy and comfort to the good. They do in earnest believe God to be their friend and father; they love him with a sincere, though imperfect love; and are easily led, from the consciousness and inward feeling of this, to consider him as pure and infinite love. And all these four last observations, put together, but especially that of this paragraph, account for the facts mentioned in the first.

SECT. IX.

THE RULE OF FAITH.

PROP. LXXVI.—*To inquire what Faith in Natural and Revealed Religion, or in the particular Tenets of Christian Churches, is necessary for the Purification and Perfection of our Natures.*

HAVING now shewn, that benevolence, piety, and the moral sense, are to be the guides of life, and the compass by which we are to steer our course through the difficulties and dangers of this mixed, imperfect state, it remains that we inquire, whether there be any rule of faith, resulting or distinct from the foregoing rule of life, that is necessary to our present duty or future salvation.

First, then, Since piety is part of the foregoing rule of life, it is evident, that no one can comply with this rule, unless he be a sincere deist at least, *i. e.* unless he believe the existence and attributes of God, his providence, a future state, and the rewards and punishments of it.

Secondly, The evidence for the christian religion seems to be so clear and strong in all christian countries, and that with respect to all ranks and conditions of men, that no person, who is previously qualified by benevolence, piety, and the moral sense, in the manner described in the seven last Sections, can refuse his assent to it. This I take to be a plain matter of observation, supported by the universal testimony of those persons that attend to it; meaning, by the christian religion, the belief of the divine mission of Moses and the prophets, of Christ and his apostles, or the truth of the Scriptures. Whoever therefore conducts himself by the foregoing rule, must believe revealed religion, as well as natural, if born in a christian country. All unbelievers, where there is so much evidence, I had almost said all doubters, seem to be culpable in a very high degree.

Thirdly, As faith in Christ is the result of a right disposition of mind in Christian countries; so is this right disposition, in its turn, the result of believing in Christ; and they increase one another reciprocally without limits. And though some persons in the heathen world were conducted to great degrees of benevolence, and uprightness of mind, and even to some degrees of piety; yet were these persons exceedingly rare, and the degrees far inferior to what is ordinarily to be found in Christian countries. This therefore is a strong proof of the necessity of faith in revealed religion. All things else being alike, the person who believes in Christ will become superior to him who does not, in proportion to the vigour of his faith. Which is also a plain and cogent reason, why those that are already Christians, should labour to the utmost of their abilities in converting the barbarous

nations, even though their present ignorance of revealed religion be excusable in them. But there is far more reason to alarm and awaken, if possible, those who disbelieve in the midst of light and evidence, *the lost sheep of the house of Israel*; since they not only want these motives and assistances to perfection, but are guilty of great prevarication and unfairness with themselves, and shut their eyes against *the light, because their deeds are evil*. If any unbeliever think this censure too severe, let him examine his own heart. Is he previously qualified by love to God, and to all the world, by a sincere regard for, and observance of, natural religion? Is he chaste, temperate, meek, humble, just, and charitable? Does he delight in God, in contemplating his Providence, praying to him, and praising him? Does he believe a future state, and expect it with hope and comfort? Is he not so fond of the praise of men, or so fearful of censure and ridicule, as to be ashamed to own Christ? If the Christian religion be true, it must be of great importance; and if of great importance, it is a duty of natural religion to inquire into it. The obligation therefore to examine seriously subsists, in some degree, as long as there is any evidence for, any doubt of, the truth of revelation. For, if true, it must be of importance, whether we see that importance or not. He who determines, that it is of no importance, determines at once that it is false. But it is too evident to all impartial observers, that those who disbelieve, or affect to disbelieve, have not made a serious, accurate inquiry; such a one as they would make about a worldly concern of moment; but content themselves, and endeavour to perplex others, with general objections, mixed, for the most part, with ridicule and raillery, things that are manifest hindrances in the search after truth. However, this may be, perhaps, too severe a censure in respect of some; nay, we ought not to condemn any, but to consider, that *to their own Master they stand or fall*.

Fourthly, A nominal, or even a real, but merely historical and speculative faith, is quite insufficient, and falls infinitely short of that which the foregoing rule of duty requires. And yet it is of some probable use to be reckoned among the number of believers, though a man be, for the present, inattentive; because such a one lies more in the way of conviction and influence; and is free from that great objection and difficulty to human nature, a reluctance to change even a nominal opinion. As to the person, who has a real, historical, speculative faith, *i. e.* who sees that the Old and New Testaments have the same and in many respects greater evidences for their truth and genuineness, than other books universally allowed, who is ready to acknowledge this, and to give reasons for it of the same kind with those that are admitted in similar cases, he possesses one of the principal requisites for generating the true, practical, internal faith, *that overcomes the world*; and if he be not withheld by

pride and self-conceit, so as to rest in this historical faith, as sufficient of itself, will make much quicker advances, *cæteris paribus*, towards the true living faith, than a person destitute of the historical one. For the true living faith is that vivid sense and perception of God, our Saviour, a future state, and the other related ideas, that make them appear at once as realities, and become powerful and instantaneous motives to action. But it is very evident, that an historical faith must, by impressing and uniting these ideas during the time that they are considered, and reflected upon, produce the effects, the reality, above described, in the same manner as the interested love of God does at last generate the pure disinterested love. And the calamities and sorrows of human life will be much more likely to strike him who is possessed of an historical faith, than a person ignorant of the subject.

It must, however, be acknowledged, that the real practical faith is by no means in exact proportion to the historical. Persons of good dispositions, of humble minds, who *pray without ceasing*, who have been much afflicted, &c. have impressions of the religious kind excited in them with more vigour and facility than others. Yet still no man can have the practical faith without some degree of the historical; and those who have little of the historical are liable to be shaken, to *be turned about by every wind of doctrine*, and to be carried into extravagances by the zeal without knowledge. *What God hath joined together let no man put asunder.* It is the duty of every man, whether he have the practical faith or not, to inquire, to read the Scriptures, and to meditate thereon; the necessary consequence of which is an increase of the historical faith. It is also the duty of every Christian to give a reason for his faith, to preach the gospel (for true Christians are a nation of priests in this sense;) which cannot be done without some knowledge of the historical evidences. Admitting therefore, that mere internal faith (if such a thing be possible) did suffice to all other purposes, it will, however, be defective in this one most necessary duty of the Christian life. Though a mere good example will do much good, yet the same good example, accompanied with knowledge and a rational faith, will do more.

Fifthly, It seems entirely useless to all good purposes, to the promotion of piety and benevolence, in the present state of things, to form any creeds, articles, or systems of faith, and to require an assent to these in words or writing. Men are to be influenced, even in respect of the principal doctrines of God's providence, a future state, and the truth of the Scriptures, by rational methods only, not by compulsion. This seems acknowledged on all hands. Why then should harsher methods be used in things of confessedly less importance? It is true, that magistrates have a power from God to inflict punishment upon such as disobey, and to confine the natural liberty of acting within

certain bounds, for the common good of their subjects. But all this is of a nature very foreign to the pretences for confining opinions by discouragements and punishments.

Those who believe neither natural nor revealed religion practically, will be held by no restraints; they will appear to consent to any thing, just as their interest leads them. And this is the case of a great part of the subscribers in all Christian communities. They have a mere nominal faith only, at the time of subscribing, not even a speculative or historical one: or if they have any degree of seriousness, and good impressions, they must do proportional violence to these by performing a religious act out of a mere interested view.

If the person be an earnest believer of natural religion, but an unbeliever in respect of revealed, (to suppose this possible for argument's sake,) he will not attempt any office in the christian ministry. However, he ought not to be deprived of *civil* privileges, whilst so many wicked, nominal Christians are suffered to enjoy them.

Suppose the person required to subscribe to be a speculative historical believer, why should his future inquiries be confined? How can he inquire honestly if they be? How can a person be properly qualified to study the word of God, and to search out its meaning, who finds himself previously confined to interpret it in a particular manner? If the subject matter of the article be of great importance to be understood and believed, one may presume, that it is plain, and needs no article; if of small importance, why should it be made a test, or insisted upon? If it be a difficult, abstruse point, no one upon earth has authority to make an article concerning it. We are all brethren; there is no father, no master, amongst us; we are helpers of, not lords over, each other's faith. If we judge from other branches of learning, as natural philosophy, or physic, we shall there find, that the pure evidence of the things themselves is sufficient to overcome all opposition, after a due time. The doctrines of gravitation, of the different refrangibility of the rays of light, of the circulation of the blood, &c. can never be believed to any useful practical purpose, till they be examined and understood; and those who now believe them, affirm that this is all that is necessary for their universal reception. If they should be mistaken in this, free examination would be so much the more requisite.

The Apostles' Creed is so plain and clear, except in the three articles concerning the descent of Christ into hell, the holy catholic church, and the communion of saints, that no one who believes the truth of the Scriptures can hesitate about it; not even how to interpret the three fore-mentioned articles, in a sense agreeable to the Scriptures. It is quite useless, therefore, to require an assent even to these articles. As to the metaphysical subtleties, which appear in the subsequent creeds, they

can at best be only human interpretations of scripture words; and, therefore, can have no authority. Words refer to words, and to grammatical and logical analogies, in an endless manner, in these things; and all the real foundation which we have is in the words of Scripture, and of the most ancient writers, considered as helps, not authorities. It is sufficient, therefore, that a man take the Scriptures for his guide, and apply himself to them with an honest heart, and humble and earnest prayer; which things have no connexion with forms and subscriptions.

Nay, it seems needless, or ensnaring, to subscribe even to the Scriptures themselves. If to any particular canon, copy, &c. ensnaring, because of the many real doubts in these things. If not, it is quite superfluous from the latitude allowed. Yet still it appears to me incontestable, that no careful impartial inquirer can doubt of the great truths of the Scriptures, such as the miraculous birth, life, death, resurrection, and ascension of Christ, &c. or of the practical consequences thence arising; and surely it cannot be necessarily requisite, that a man should believe more than these.

For, lastly, Let us suppose the person required to assent or subscribe, to be a real earnest believer. It can scarce be supposed, that such a person should assent to any set of articles, so as honestly to affirm, that he would choose to express his own sense of the scripture language in these words. To strain either the Scriptures, or the articles, must be a very ungrateful task to an ingenuous man; and, perhaps, there may be so wide a difference in some instances in his opinion, that no straining can bring them together. And thus some of the most earnest believers are excluded from the christian ministry, and from certain common privileges of society, by a method which suffers nominal wicked Christians to pass without difficulty.

If it be objected, that unless preachers subscribe, they may teach different doctrines; I answer, that they do this, though they do subscribe; and that in the most important practical points. If the Scriptures cannot yet produce a true unity of opinion on account of our present ignorance, and the weakness and wickedness of our natures, how should articles do this? Men can put as different senses upon articles, as upon texts, and so dispute without end. Which evidently appears to have been the case in the primitive church. Every decision, as soon as settled, became the source of a new division between persons, who yet still agreed to the foregoing decision in words; till at last the whole efficacy and spirit of Christianity was lost in mere verbal disputes. But the best answer is, that preachers ought entirely to confine themselves to practical subjects, the descriptions of the virtues and vices, with the motives for and against each, the directions to attain the virtues, and avoid the vices; and this in all the various real circumstances of human life. Learned inquiries have their use undoubtedly; but they are much better

communicated to the learned world by the press, than to a mixed assembly by the pulpit. It is a kind of sacrilege to rob God's flock of the nourishment due to them from public preachings, and, in its stead, to run out upon questions that minister no profit to the hearers, at least far the greatest part.

As to the press, since all other men have the liberty of conveying their thoughts to the public that way, it is surely unfitting that the ministers of the gospel should be deprived of it. And, indeed, to lay any restraints, looks like distrusting the cause. There is undoubtedly a very bad use made of the press, and *woe to those by whom offences come* to the little ones that believe in Christ! But it is to be hoped and presumed, that the power of the wicked to do harm is not equal to the power of the good to do good, in this or any other such neutral method of communicating infection good and bad to the public. This would be to prefer barbarity and ignorance to the instruction and civilization of mankind. Learning, arts, and improvements of all kinds, are subservient both to good and bad purposes; and yet still the balance is probably on the side of good upon the whole, since God is all powerful, all wise, and all good. These attributes must ever turn the scale to their own side, finitely in every finite portion of time, infinitely in infinite time. We need not fear, therefore, but that true knowledge will at last be increased and prevail, that the wise and good will understand, the wicked be silenced and converted, and the church of Christ fill the whole earth. It is a great insult offered to the truths of religion, to suppose that they want the same kind of assistance as impostures, human projects, or worldly designs. Let every man be allowed to think, speak, and write, freely; and then the errors will combat one another, and leave truth unhurt.

Sixthly, Though creeds, articles, &c. seem to have no use now, but even to be prejudicial to the cause of truth in themselves; yet it may be necessary to submit to some forms of this kind in certain cases: at least, it no ways becomes a Christian to declaim against them in violent terms, or oppose them with bitterness, but merely, in a plain dispassionate way, to represent the truth of the case, so as by degrees to draw men's zeal from these lesser matters, and transfer it upon greater. *Let not him that eateth, despise him that eateth not; and let not him which eateth not, judge him that eateth.* There may be good relative reasons in both cases. And it may be, and probably is the truth, that in the early ages of the church, whilst Christians were Judaizers, entangled in externals, gross in their conceptions, &c. these forms were necessary, *cæteris manentibus*. But now they grow old, and seem ready to die away, and to give place to the worship of God *in spirit and in truth*; in which there is no Papist, Protestant, Lutheran, Calvinist, Trinitarian, Unitarian, Mystic, Methodist, &c. but all these distinctions are carried away like the chaff of the summer threshing-floors. We are all Christians; we received

this denomination in apostolic times, and ought to seek no other. Only let us take care to depart from iniquity, to have the true seal of God in our foreheads, not the mark of the beast. The real conversion of the heart from the idolatrous worship of pleasure, honour, and profit, of sensation, imagination, ambition, and self-interest, to serve the living God, is the only thing of importance; *circumcision and uncircumcision are equally nothing. Let every man abide in the same calling wherein he was called.* Only, where a plain act of insincerity is required, this approaches to the case of eating in the idol's temple, and gives great offence to others.

Seventhly, If we examine the doctrines which are chiefly contested among Christians by the opposite parties, it will appear, that the disputes are, in great measure, verbal, and proceed from men's not knowing the true nature and use of words. Thus, if we consider the doctrine of infallibility, the nature of words shews at once, that this could be of no use, since the decisions of the infallible judge must be expressed in words, and consequently be liable to be misunderstood by some or other of the readers, for the same reasons as the Scriptures are.—To say that Christ's body and blood are in the bread and wine, so as that the sensible qualities of one become the sensible qualities of the other, would be to appeal to the senses for assent, where they instantly reject the proposition. To say that Christ's mystical or glorified body is present in some way or other, is what no one can deny, because nothing is really affirmed. The words seem to coalesce into a verbal truth; but when we attempt to realize the proposition, it vanishes. The Scripture expressions concerning the mystical body of Christ, and his union with the church, contain within them some most important and wonderful truths undoubtedly, but they are yet sealed up from us.—In the disputes concerning the Trinity, and incarnation of Christ, if the words *persons, substance, nature, &c.* be used as in other cases, or any way defined, the most express contradictions follow: yet the language of the Scriptures is most difficult, sublime, and mysterious, in respect of the person of Christ; so that one cannot fall short of paying all that honour to Christ, which the most orthodox believe to be required.—As to the doctrine of the satisfaction of Christ, it appears that he has done all for us that one being can do for another; and that it would be a most unjustifiable and narrow way of expressing ourselves, to confine the benefits received from Christ to that of mere example. But the first and most literal sense of the words *sacrifice, redemption, &c.* when realized, is evidently impossible; and we do not seem to be able to give any better general sense to these words, than by saying, that they signify that the sufferings of one being are, by the order of God, made the means of happiness to another. To adopt the ideas of *debt, wrath of God, &c.* in a strict sense, is anthropomorphism.—The introduction of new, unscriptural, technical terms, seems

scarce justifiable, unless as far as one christian brother may thereby endeavour to make the harmony and analogy of the Scripture language to itself, and to the course of nature, more evident to another. But this is all *private interpretation*. And it often happens in these cases, that an hypothesis is taken up hastily, in order to reconcile the Scripture to itself, like those philosophical ones, which are not drawn from a number of concurring facts, but merely accommodated to a few particular appearances.

CHAP. IV.

THE EXPECTATIONS OF MANKIND, HERE AND HEREAFTER, IN
CONSEQUENCE OF THEIR OBSERVANCE OR VIOLATION OF THE
RULE OF LIFE.

SECT. I.

THE EXPECTATIONS OF INDIVIDUALS IN THE PRESENT LIFE.

PROP. LXXVII.—*It is probable, that most or all Men receive more Happiness than Misery in their Passage through the present Life.*

SOME evidences for this proposition have been given above, where it was alleged as one of the proofs of the goodness of God. Here we may consider it, both as deducible from those evidences, and from the goodness of God, previously established upon independent principles.

For if we suppose God to be both infinitely benevolent, and the sole cause of all things; if, farther, the relative appellations of governor, friend, and father, may with propriety be made the foundation of our inquiries into his dispositions in general (all which I have endeavoured to prove above); we can scarce suppose, but that the remarkable period of our existence, which commences at our birth, and ends with the death of the body, which we then brought into the world with us, will, upon the whole, afford us more pleasure than pain. This is, at least, our first and most natural presumption, in the view of things here considered. However it must always be remembered, that we are not proper judges of such high speculations; and that an over-balance of misery in this life, or any other, is perfectly consistent with the infinite goodness of God, even according to our ways of reasoning, upon supposition, that all his creatures become happy upon the whole at last, finitely or infinitely.

I choose therefore to rest this proposition chiefly upon certain intimations, and indirect evidences thereof, which are scattered up and down in the Scriptures. Such are, the blessing of God conferred upon *all* his creatures at their creation, his covenant

with them *all* at the flood, the precepts to *all* to praise him, the mention of his being *loving to every man, of remembering mercy in judgment, not being extreme to mark what is done amiss, &c.* These are no direct proofs of the proposition here advanced; but they leave such impressions of love and mercy upon the mind, and seem intended to put us into such a way of thinking and reasoning, as lead to it. They afford therefore some presumption in its favour, since nothing contrary thereto is to be found any where either in the word or works of God.

The murmurings and bitter outcries of men in a state of suffering are no more an evidence against this proposition, than the extravagant mirth, and chimerical hopes, of unexperienced persons, during health and prosperity, are for it. Neither of these take in the whole of the case.

PROP. LXXVIII. — *The Balance cannot be much in Favour even of the most Happy, during the present Life.*

FOR, first, This is agreeable to the general experience of mankind. It is obvious, that life is chequered with good and evil in such degrees and varieties, as that the first cannot prevail much. Agreeably to this, the experienced and dispassionate, in reviewing their past life, will at least affirm that the happiness has not greatly exceeded the misery. And indeed the difficulty of proving the foregoing proposition is a very sufficient evidence for this.

Secondly, The disorderly state of the external world, and the imperfection of our bodies, with their tendency to corruption, do not permit that happiness should much exceed misery in the present life; and may be considered as the efficient instrumental cause of this. Bodily pain must in many cases be impressed upon us by external objects; both this, and bodily pleasure, lay the foundation for intellectual pains, and for irregular passions, which lead back again to pain, bodily and mental; our bodies must return to dust, and every manifest approach thereto must be attended with suffering: and the unknown internal structure of the brain, the great instrument of sense and thought, is such, as subjects us, from innumerable secret unavoidable causes, to pass into the limits of pain. All which is only saying in other words, that we are fallen creatures.

Thirdly, In our present circumstances, all other things remaining as they are, it is requisite for us not to have any great over-balance of happiness in this life; and this may be considered as the final cause. For we may hope, by this perpetual mixture of misery with our happiness, to be the sooner and the more perfectly freed from that self-love, gross or refined, which every kind and degree of happiness, even the most spiritual, contributes to generate in us; and to make the greater progress in learning the virtue of benevolence, compassion, humility, fear of God, submission to

his will, earnest application to him, faith, hope, love towards him.

Fourthly, The whole tenor of the Scripture shews, both in a direct and indirect way, that we ought not, cannot expect any great or lasting happiness in this life.

We ought therefore, whenever false flattering hopes, with relation to our future condition in this life, rise up to view in our imaginations, and tempt us, instantly to reject them; and, in the language of the Scriptures, *to rejoice as though we rejoiced not*; to remember that we *are strangers and pilgrims here*, that we *only dwell in tabernacles, have no continuing city, but expect one to come, the New Jerusalem*, of which we are denizens, *where our treasure and hearts ought to be*. The best and most religious persons ought to expect, and even to desire, this *daily bread of sorrow and affliction, this blessedness of those that mourn, and to watch and pray* against the temptations of prosperity, lest the day of death should come upon them unawares, *as a thief in the night, while they are eating and drinking, marrying and giving in marriage*.

COR. We might shew, by a like method of reasoning, that if the misery of this life should, in certain cases, outweigh the happiness, it cannot, however, do this in any great degree. There must, from the nature of our frame and circumstances here, be many intervals of ease, cheerfulness, and even positive pleasure. Dejection and despondency are therefore as unsuitable to our present situation, as a vain confidence, and foolish hope, of uninterrupted happiness. We may learn also hence not to be terrified at any self-denials or sufferings for the sake of religion, exclusively of those arguments which shew in a direct way that religion promotes our present happiness, as well as our future. Our very natures prevent the long continuance of exquisite misery. Misery by continuance declines, and even passes into happiness; and there must be, in every state of long continuance, the frequent intervention of grateful sensations and ideas.

PROP. LXXIX.—*Virtue has always the fairest Prospect, even in this Life; and Vice is always exposed to the greatest Hazards.*

THIS has been the business of the last chapter to shew. But it is a truth which is sufficiently evident from common observation. Particular acts of virtue and vice often fail of their due reward and punishment, if we take in no more than a small period of time after the act is performed. But then, if we take in the indefinite extent of this life, and estimate the natural expectations, it can scarce be doubted, but that every act of virtue is our greatest wisdom, even in respect of this world, every act of vice our greatest folly. Now this general tendency of virtue and vice respectively may be considered as the principal

evidence, which the light of nature, not subtilized or refined by deep speculations, affords for the moral character of the Deity. The rewards which the course of nature bestows upon virtue in general, and the fairness of the prospect which it affords to the virtuous, shew that the virtuous are acceptable to the Deity; and we may conclude, for like reasons, that vice is odious in his sight.

PROP. LXXX.—*It does not seem at all probable, that Happiness is exactly proportioned to Virtue in the present Life.*

FOR, first, Those who suffer martyrdom for the sake of religion cannot be said to receive any reward in this life for this their last and greatest act of fidelity.

Secondly, Many good men are exercised with severe trials, purified thereby, and removed into another state in the course of this purification, or soon after it. Diseases which end in death, are a principal means of such purifications.

Thirdly, There are frequent instances of persons free indeed from gross vices, but void of great virtues, who from a favourable conjuncture of circumstances in this world, such as we may suppose attended the rich man in the parable, *fare sumptuously every day*, and live in a state of comparative ease and pleasure.

Fourthly, The same thing seems to hold in certain rare instances, even of very vicious persons: and one might almost conjecture, that Providence exposes some instances of this kind to view in a notorious manner, that the apparent inequality of its dispensations here, in a few cases, and the argument for a future state thence deducible, may make the greater impression upon us.

The reader may observe, that this proposition is not contrary to the foregoing; and that the foregoing must be established previously, before we can draw an argument for a future state from this, and the moral character of the Deity, put together.

It is to be observed also of the reasoning made use of under all the four propositions of this Section, that it is rather probable, and conclusive, in a general way only, than demonstrative and precise. However, the probability and precision are as great as is necessary in practical matters. The practical inferences would remain the same, though these were less.

SECT. II.

THE EXPECTATIONS OF BODIES POLITIC, THE JEWS IN PARTICULAR, AND THE WORLD IN GENERAL, DURING THE PRESENT STATE OF THE EARTH.

PROP. LXXXI.—*It is probable, that all the present Civil Governments will be overturned.*

THIS may appear from the scripture prophecies, both in a direct way, *i. e.* from express passages; such as those concerning the destruction of the image, and four beasts, in Daniel; of Christ's *breaking all nations with a rod of iron, and dashing them in pieces like a potter's vessel, &c.* and from the supremacy and universal extent of the fifth monarchy, or kingdom of the saints, which is to be set up.

We may conclude the same thing also from the final restoration of the Jews, and the great glory and dominion promised to them, of which I shall speak below.

And it adds some light and evidence to this, that all the known governments of the world have the evident principles of corruption in themselves. They are composed of jarring elements, and subsist only by the alternate prevalence of these over each other. The splendour, luxury, self-interest, martial glory, &c. which pass for essentials in christian governments, are totally opposite to the meek, humble, self-denying spirit of Christianity; and whichever of these finally prevails over the other, the present form of the government must be dissolved. Did true Christianity prevail throughout any kingdom entirely, the riches, strength, glory, &c. of that kingdom would no longer be an object of attention to the governors or governed; they would become a nation of priests and apostles, and totally disregard the things of this world. But this is not to be expected: I only mention it to set before the reader the natural consequence of it. If, on the contrary, worldly wisdom and infidelity prevail over Christianity, which seems to be the prediction of the Scriptures, this worldly wisdom will be found utter foolishness at last, even in respect of this world; the governments which have thus lost their cement, the sense of duty, and the hopes and fears of a future life, will fall into anarchy and confusion, and be entirely dissolved. And all this may be applied, with a little change, to the Mahometan and heathen governments. When Christianity comes to be propagated in the countries where these subsist, it will make so great a change in the face of affairs, as must shake the civil powers, which are here both externally and internally opposite to it; and the increase of wickedness, which is the natural and necessary consequence of their opposition, will farther accelerate their ruin.

The dissolution of ancient empires and republics may also

prepare us for the expectation of a dissolution of the present governments. But we must not carry the parallel too far here, and suppose that as new governments have arisen out of the old ones, resembling them in great measure, subsisting for a certain time, and then giving place to other new ones, so it will be with the present governments. The prophecies do not admit of this; and it may be easily seen, that the situation of things in the great world is very different from what it has ever been before. Christianity must now either be proved true, to the entire conviction of unbelievers; or, if it be an imposture, it will soon be detected. And whichever of these turns up, must make the greatest change in the face of affairs. I ought rather to have said, that the final prevalence and establishment of Christianity, which, being true, cannot but finally prevail, and be established, will do this. But it may perhaps be of some use just to put false suppositions.

How near the dissolution of the present governments, generally or particularly, may be, would be great rashness to affirm. Christ will come in this sense also *as a thief in the night*. Our duty is therefore to watch, and to pray; to be faithful stewards; to give meat and all other requisites, in due season, to those under our care; and to endeavour, by these and all other lawful means, to preserve the government, under whose protection we live, from dissolution, seeking the peace of it, and submitting to every ordinance of man for the Lord's sake. No prayers, no endeavours of this kind, can fail of having some good effect, public or private, for the preservation of ourselves or others. The great dispensations of Providence are conducted by means that are either secret, or, if they appear, that are judged feeble and inefficacious. No man can tell, however private his station may be, but his fervent prayer may avail to the salvation of much people. But it is more peculiarly the duty of magistrates thus to watch over their subjects, to pray for them, and to set about the reformation of all matters civil and ecclesiastical, to the utmost of their power. Good governors may promote the welfare and continuance of a state, and wicked ones must accelerate its ruin. The sacred history affords us instances of both kinds, and they are recorded there for the admonition of kings and princes in all future times.

It may not be amiss here to note a few instances of the analogy between the body natural, with the happiness of the individual to which it belongs, and the body politic, composed of many individuals, with its happiness, or its flourishing state in respect of arts, power, riches, &c. Thus all bodies politic seem, like the body natural, to tend to destruction and dissolution, as is here affirmed, through vices public and private; and to be respited for certain intervals, by partial, imperfect reformations. There is no complete or continued series of public happiness on one hand, no utter misery on the other; for the dissolution of

the body politic is to be considered as its death. It seems as romantic therefore for any one to project the scheme of a perfect government in this imperfect state, as to be in pursuit of an universal remedy, a remedy which should cure all distempers, and prolong human life beyond limit. And yet as temperance, labour, and medicines, in some cases, are of great use in preserving and restoring health, and prolonging life; so industry, justice, and all other virtues, public and private, have an analogous effect in respect of the body politic. As all the evils, which individuals suffer through the infirmity of the mortal body, and the disorders of the external world, may, in general, contribute to increase their happiness even in this life, and also are of great use to others; and as, upon the supposition of a future state, death itself appears to have the same beneficial tendency in a more eminent degree than any other event in life, now considered as indefinitely prolonged; so the distresses of each body politic are of great use to this body itself, and also of great use to all neighbouring states; and the dissolution of governments has much promoted the knowledge of true religion, and of useful arts and sciences, all which seem, in due time and manner, intended to be entirely subservient to true religion at last. And this affords great comfort to benevolent and religious persons, when they consider the histories of former times, or contemplate the probable consequences of things in future generations.

PROP. LXXXII.—*It is probable, that the present Forms of Church Government will be dissolved.*

THIS proposition follows from the foregoing. The civil and ecclesiastical powers are so interwoven and cemented together, in all the countries of Christendom, that if the first fall, the last must fall also.

But there are many prophecies, which declare the fall of the ecclesiastical powers of the christian world. And though each church seems to flatter itself with the hopes of being exempted; yet it is very plain, that the prophetic characters belong to all. They have all left the true, pure, simple religion; and teach for doctrines the commandments of men. They are all merchants of the earth, and have set up a kingdom of this world, abounding in riches, temporal power, and external pomp. They have all a dogmatizing spirit, and persecute such as do not receive their own mark, and worship the image which they have set up. They all neglect Christ's command of preaching the gospel to all nations, and even that of going to *the lost sheep of the house of Israel*; there being innumerable multitudes in all christian countries, who have never been taught to read, and who are, in other respects also, destitute of the means of saving knowledge. It is very true, that the church of Rome is *Babylon the Great, and the mother of harlots, and of the abominations of the earth*. But

all the rest have copied her example, more or less. They have all received money, like Gehazi; and therefore the leprosy of Naaman will cleave to them, and to their seed for ever. And this impurity may be considered not only as justifying the application of the prophecies to all the christian churches, but as a natural cause for their downfall. The corrupt governors of the several churches will ever oppose the true gospel, and in so doing will bring ruin upon themselves.

The destruction of the temple at Jerusalem, and of the hierarchy of the Jews, may likewise be considered as a type and presage of the destruction of that Judaical form of rites, ceremonies, and human ordinances, which takes place, more or less, in all christian countries.

We ought, however, to remark here,

First, That though the church of Christ has been corrupted thus in all ages and nations, yet there have been, and will be, in all, many who receive the seal of God, and worship him *in spirit and in truth*. And of these as many have filled high stations, as low ones. Such persons, though they have concurred in the support of what is contrary to the pure religion, have, however, done it innocently, with respect to themselves, being led thereto by invincible prejudices.

Secondly, Nevertheless, when it so happens, that persons in high stations in the church have their eyes enlightened, and see the corruptions and deficiencies of it, they must incur the prophetic censures in the highest degree, if they still concur, nay, if they do not endeavour to reform and purge out these defilements. And though they cannot, according to this proposition, expect entire success; yet they may be blessed with such a degree as will abundantly compensate their utmost endeavours, and rank them with the prophets and apostles.

Thirdly, As this corruption and degeneracy of the christian church has proceeded from the fallen state of mankind, and particularly of those nations to whom the gospel was first preached, and amongst whom it has since been received; so it has, all other things being supposed to remain the same, suited our circumstances in the best manner possible, and will continue to do so, as long as it subsists. God brings good out of evil, draws men to himself in such manner as their natures will admit of, by external pomp and power, by things not good in themselves, and by some that are profane and unholy. He makes use of some of their corruptions, as means of purging away the rest. The impurity of mankind is too gross to unite at once with the strict purity of the gospel. The Roman empire first, and the Goths and Vandals afterwards, required, as one may say, some superstitions and idolatries to be mixed with the christian religion; else they could not have been converted at all.

Fourthly, It follows from these considerations, that good men ought to submit to the ecclesiastical *powers that be*, for conscience

sake, as well as to the civil ones. They are both from God, as far as respects inferiors. Christ and his apostles observed the law, and walked orderly, though they declared the destruction of the temple, and the change of the customs established by Moses. Both the Babylonians, who destroyed Jerusalem the first time, and the Romans, who did it the second, were afterwards destroyed themselves in the most exemplary manner. And it is probable, that those who shall hereafter procure the downfall of the forms of church government, will not do this from pure love, and christian charity, but from the most corrupt motives, and by consequence bring upon themselves, in the end, the severest chastisements. It is therefore the duty of all good Christians to obey both the civil and ecclesiastical powers under which they were born, *i. e.* provided disobedience to God be not enjoined, which is seldom the case; to promote subjection and obedience in others; gently to reform and rectify, and to pray for the peace and prosperity of their own Jerusalem.

PROP. LXXXIII.—*It is probable that the Jews will be restored to Palestine.*

THIS appears from the prophecies which relate to the restoration of the Jews and Israelites to their own land. For,

First, These have never yet been fulfilled in any sense agreeable to the greatness and gloriousness of them. The peace, power, and abundance of blessings, temporal and spiritual, promised to the Jews upon their return from captivity, were not bestowed upon them in the interval between the reign of Cyrus, and the destruction of Jerusalem, by Titus; and ever since this destruction they have remained in a desolate state.

Secondly, The promises of restoration relate to the ten tribes, as well as to the two of Judah and Benjamin. But the ten tribes, or Israelites, which were captivated by Salmaneser, have never been restored at all. There remains therefore a restoration yet future for them.

Our ignorance of the place where they now lie hid, or fears that they are so mixed with other nations, as not to be distinguished and separated, ought not to be admitted as objections here. Like objections might be made to the resurrection of the body; and the objections both to the one, and the other, are probably intended to be obviated by Ezekiel's prophecy concerning the dry bones. It was one of the great sins of the Jews to call God's promises in question, on account of apparent difficulties and impossibilities; and the Sadducees, in particular, erred concerning the resurrection, because *they knew not the Scriptures, nor the power of God.* However, it is our duty to inquire, whether the ten tribes may not remain in the countries where they were first settled by Salmaneser, or in some others.

Thirdly, A double return seems to be predicted in several prophecies.

Fourthly, The prophets who lived since the return from Babylon, have predicted a return in similar terms with those who went before. It follows therefore, that the predictions of both must relate to some restoration yet future.

Fifthly, The restoration of the Jews to their own land seems to be predicted in the New Testament.

To these arguments, drawn from prophecy, we may add some concurring evidences, which the present circumstances of the Jews suggest.

First, then, The Jews are yet a distinct people from all the nations amongst which they reside. They seem therefore reserved by Providence for some such signal favour, after they have suffered the due chastisement.

Secondly, They are to be found in all the countries of the known world. And this agrees with many remarkable passages of the Scriptures, which treat both of their dispersion, and of their return.

Thirdly, They have no inheritance of land in any country. Their possessions are chiefly money and jewels. They may therefore transfer themselves with the greater facility to Palestine.

Fourthly, They are treated with contempt and harshness, and sometimes with great cruelty, by the nations amongst whom they sojourn. They must therefore be the more ready to return to their own land.

Fifthly, They carry on a correspondence with each other throughout the whole world; and consequently must both know when circumstances begin to favour their return, and be able to concert measures with one another concerning it.

Sixthly, A great part of them speak and write the Rabbinical Hebrew, as well as the language of the country where they reside. They are therefore, as far as relates to themselves, actually possessed of an universal language and character; which is a circumstance that may facilitate their return, beyond what can well be imagined.

Seventhly, The Jews themselves still retain a hope and expectation, that God will once more restore them to their own land.

COR. I. May not the two captivities of the Jews, and their two restorations, be types of the first and second death, and of the first and second resurrections?

COR. II. Does it not appear agreeable to the whole analogy both of the word and works of God, that the Jews are types both of each individual in particular, on one hand, and of the whole world in general, on the other? May we not therefore hope, that, at least after the second death, there will be a resurrection to life eternal to every man, and to the whole creation, which groans, and travails in pain together, waiting for the adoption, and glorious liberty, of the children of God?

COR. III. As the downfall of the Jewish state under Titus was the occasion of the publication of the gospel to us Gentiles, so our downfall may contribute to the restoration of the Jews, and both together bring on the final publication and prevalence of the true religion; of which I shall treat in the next proposition. Thus the type, and the thing typified, will coincide; the first fruits, and the lump, be made holy together.

PROP. LXXXIV.—*The Christian Religion will be preached to, and received by, all Nations.*

THIS appears from the express declarations of Christ, and from many of his parables, also from the declarations and predictions of the apostles, and particularly from the Revelation. There are likewise numberless prophecies in the Old Testament, which admit of no other sense, when interpreted by the events which have since happened, the coming of Christ, and the propagation of his religion.

The truth of the Christian religion is an earnest and presage of the same thing, to all who receive it. For every truth of great importance must be discussed and prevail at last. The persons who believe can see no reasons for their own belief, but what must extend to all mankind by degrees, as the diffusion of knowledge to all ranks and orders of men, to all nations, kindred, tongues, and people, cannot now be stopped, but proceeds ever with an accelerated velocity. And, agreeably to this, it appears that the number of those who are able to give a reason for their faith increases every day.

But it may not be amiss to set before the reader in one view some probable presumptions for the universal publication and prevalence of the Christian religion, even in the way of natural causes.

First, then, The great increase of knowledge, literary and philosophical, which has been made in this and the two last centuries, and continues to be made, must contribute to promote every great truth, and particularly those of revealed religion, as just now mentioned. The coincidence of the three remarkable events, of the Reformation, the invention of printing, and the restoration of letters, with each other, in time, deserves particular notice here.

Secondly, The commerce between the several nations of the world is enlarged perpetually more and more. And thus the children of this world are opening new ways of communication for future apostles to spread the glad tidings of salvation to the uttermost parts of the earth.

Thirdly, The apostasy of nominal Christians, and objections of infidels, which are so remarkable in these days, not only give occasion to search out and publish new evidences for the truth of revealed religion, but also oblige those who receive it, to purify

it from errors and superstitions; by which means its progress amongst the yet heathen nations will be much forwarded. Were we to propagate religion, as it is now held by the several churches, each person would propagate his own orthodoxy, lay needless impediments and stumbling-blocks before his hearers, and occasion endless feuds and dissensions amongst the new converts. And it seems as if God did not intend, that the general preaching of the gospel should be begun, till religion be discharged of its incumbrances and superstitions.

Fourthly, The various sects, which have arisen amongst Christians in late times, contribute both to purify religion, and also to set all the great truths of it in a full light, and to shew their practical importance.

Fifthly, The downfall of the civil and ecclesiastical powers, mentioned in the 81st and 82d propositions, must both be attended with such public calamities, as will make men serious, and also drive them from the countries of Christendom into the remote parts of the world, particularly into the East and West Indies; whither consequently they will carry their religion now purified from errors and superstitions.

Sixthly, The restoration of the Jews, mentioned in the last proposition, may be expected to have the greatest effect in alarming mankind, and opening their eyes. This will be such an accomplishment of the prophecies, as will vindicate them from all cavils. Besides which, the careful survey of Palestine, and the neighbouring countries, the study of the Eastern languages, of the histories of the present and ancient inhabitants, &c. (which must follow this event) when compared together, will cast the greatest light upon the Scriptures, and at once prove their genuineness, their truth, and their divine authority.

Seventhly, Mankind seem to have it in their power to obtain such qualifications in a natural way, as, by being conferred upon the apostles in a supernatural one, were a principal means of their success in the first propagation of the gospel.

Thus, as the apostles had the power of healing miraculously, future missionaries may in a short time accomplish themselves with the knowledge of all the chief practical rules of the art of medicine. This art is wonderfully simplified of late years, has received great additions, and is improving every day, both in simplicity and efficacy. And it may be hoped, that a few theoretical positions, well ascertained, with a moderate experience, may enable the young practitioner to proceed to a considerable variety of cases with safety and success.

Thus also, as the apostles had the power of speaking various languages miraculously, it seems possible from the late improvements in grammar, logic, and the history of the human mind, for young persons, by learning the names of visible objects and actions in any unknown barbarous language, to improve and extend it immediately, and to preach to the natives in it.

The great extensiveness of the Rabbinical Hebrew, and of Arabic, of Greek and Latin, of Slavonic and French, and of many other languages in their respective ways, also of the Chinese character, ought to be taken into consideration here.

And though we have not the gift of prophecy, yet that of the interpretation of prophecy seems to increase every day, by comparing the Scriptures with themselves, the prophecies with the events, and, in general, the word of God with his works.

To this we may add, that when preachers of the gospel carry with them the useful manual arts, by which human life is rendered secure and comfortable, such as the arts of building, tilling the ground, defending the body by suitable clothing, &c. it cannot but make them extremely acceptable to the barbarous nations; as the more refined arts and sciences, mathematics, natural and experimental philosophy, &c. will to the more civilized ones.

And it is an additional weight in favour of all this reasoning, that the qualifications here considered may all be acquired in a natural way. For thus they admit of unlimited communication, improvement, and increase; whereas, when miraculous powers cease, there is not only one of the evidences withdrawn, but a recommendation and means of admittance also.

However, far be it from us to determine by anticipation, what God may or may not do! The natural powers, which favour the execution of this great command of our Saviour's, to preach the gospel to all nations, ought to be perpetual monitors to us to do so; and, as we now live in a more adult age of the world, more will now be expected from our natural powers. The Jews had some previous notices of Christ's first coming, and good persons were thereby prepared to receive him; however, his appearance, and entire conduct, were very different from what they expected; so that they stood in need of the greatest docility and humility, in order to become disciples and apostles. And it is probable, that something analogous to this will happen at Christ's second coming. We may perhaps say, that some glimmerings of the day begin already to shine in the hearts of all those who study and delight in the word and works of God.

PROP. LXXXV.—*It is not probable that there will be any pure or complete Happiness, before the Destruction of this World by Fire.*

THAT the restoration of the Jews, and the universal establishment of the true religion, will be the causes of great happiness, and change the face of this world much for the better, may be inferred both from the prophecies, and from the nature of the thing. But still, that the great crown of glory promised to Christians must be in a state ulterior to this establishment, appears for the following reasons.

First, From the express declarations of the Scriptures. Thus St. Peter says, that the earth must be burnt up, before we are to expect *a new heaven, and new earth, wherein dwelleth righteousness*; and St. Paul, that *flesh and blood cannot inherit the kingdom of God*; the celestial glorious body, made like unto that of Christ, at the resurrection of the dead, being requisite for this purpose.

Secondly, The present disorderly state of the natural world does not permit of unmixed happiness; and it does not seem, that this can be rectified in any great degree, till the earth have received the baptism by fire.

But I presume to affirm nothing particular in relation to future events. One may just ask, whether Christ's reign of a thousand years upon earth does not commence with the universal establishment of Christianity; and whether the second resurrection, the new heavens, and new earth, &c. do not coincide with the conflagration.

One ought also to add, with St. Peter, as the practical consequence of this proposition, that the dissolution of this world by fire is the strongest motive to an indifference to it, and to that holy conversation and godliness, which may fit us for *the new heavens, and new earth*.

SECT. III.

A FUTURE STATE AFTER THE EXPIRATION OF THIS LIFE.

PROP. LXXXVI.—*It is probable from the mere Light of Nature, that there will be a Future State.*

I DO not here mean, that mankind in ancient times did discover a future state, and reason themselves into it. This, I apprehend, is contrary to the fact, a future state having been taught all mankind by patriarchal revelations before or after the flood. Nor do I mean, that men could have done this without any assistance, primarily or secondarily, from revelation, and by mere unassisted reason. This is a problem of too deep a nature to be determined conclusively; or, if it can, we shall determine for the opposite side, as it seems to me, as soon as our knowledge of the powers of the human mind is arrived at a sufficient height. My design is only to shew, that the works of God are so far opened to us in the present age, that, when the question concerning a future state is put, we ought to determine for the affirmative, though the authority of his word be not taken into consideration. Here then I observe,

First, That it is not possible to produce any evidence against a future state; so that the probability for it must at least be equal to that against it, *i. e.* to the fraction $\frac{1}{2}$, if we speak according to the precise language used in the doctrine of chances. We are apt indeed to conclude, that because what we see *is*, so what we see not, *is not*; and consequently that there is no future state; *i. e.* we make our ignorance of the means by which our existence is preserved after death, and of the manner in which we are to exist, an argument against it. But this is utterly inconclusive. Our ignorance is a nothing, and therefore can be no foundation to go upon; and we have every day instances of the mistakes which reasoning from it would lead us into. If there be really a future state, it seems very possible, that its connexion with other realities in this state may afford presumptions for it; and that it does so, I shall shew in the paragraphs that follow: but, if there be no future state, this non-entity cannot have any properties or connexions, upon which to erect an argument for it. We must therefore, previously to all probable arguments for a future state, own that we are ignorant whence we came, and whither we go; and that our not being able to penetrate into the dark regions beyond death, were that absolutely the case, would not be an evidence, that there is nothing in those regions. That we can both penetrate thither, and discover something in these regions, is my next business to shew. For,

Secondly, The subtle nature of sensation, thought, and motion, afford some positive presumptions for a future state. The connexion of these with matter, and their dependence on it, are perhaps more fully seen in the foregoing account of vibrations and association, than in any other system that has yet been produced. However, there remains one chasm still, *viz.* that between sensation, and the material organs, which this theory does not attempt to fill up. An immaterial substance may be required for the simplest sensation; and if so, since it does not appear how this substance can be effected by the dissolution of the gross body at death, it remains probable, that it will subsist after death, *i. e.* that there will be a future state.

Or if we take the system of the materialists, and suppose matter capable of sensation, and consequently of intellect, ratiocination, affection, and the voluntary power of motion, we must, however, suppose an elementary infinitesimal body in the embryo, capable of vegetating *in utero*, and of receiving and retaining such a variety of impressions of the external world, as corresponds to all the variety of our sensations, thoughts, and motions; and when the smallness and wonderful powers of this elementary body are considered in this view, it seems to me, that the deposition of the gross crust at death, which was merely instrumental during the whole course of life, is to be looked upon as having no more power to destroy it, than the accretion of this crust had

a share in its original existence, and wonderful powers; but, on the contrary, that the elementary body will still subsist, retain its power of vegetating again, and, when it does this, shew what changes have been made in it by the impressions of external objects here; *i. e.* receive according to the deeds done in the *gross* body, and reap as it has sowed.

Or, if these speculations be thought too refined, we may, however, from the evident instrumentality of the muscles, membranes, bones, &c. to the nervous system, and of one part of this to another, compared with the subtle nature of the principle of sensation, thought, and motion, infer in an obvious and popular, but probable way, that this principle only loses its present instrument of action by death. And the restitution of our mental and voluntary powers, after their cessation or derangement by sleep, apoplexies, maniacal and other disorders, prepares for the more easy conception of the possibility and probability of the same thing after death. As therefore, before we enter upon any disquisitions of this kind, the probability for a future state is just equal to that against it, *i. e.* each equal to the fraction $\frac{1}{2}$; so it seems, that the first step we take, though it be through regions very faintly illuminated, does, however, turn the scale, in some measure, in favour of a future state; and that, whether the principle of thought and action within us be considered in the most philosophical light to which we can attain, or in an obvious and popular one.

Thirdly, The changes of some animals into a different form, after an apparent death, seem to be a strong argument of the forementioned power of elementary animal bodies; as the growth of vegetables from seeds apparently putrefied is of a like power in elementary vegetable bodies. And all these phænomena, with the renewals of the face of nature, awaking from sleep, recovery from diseases, &c. seem in the vulgar, most obvious, and most natural way of considering these things, to be hints and presumptions of a life after the extinction of this.

Fourthly, The great desire of a future life, with the horror of annihilation, which are observable in a great part of mankind, are presumptions for a future life, and against annihilation. All other appetites and inclinations have adequate objects prepared for them; it cannot therefore be supposed, that this sum total of them all should go ungratified. And this argument will hold, in some measure, from the mere analogy of nature, though we should not have recourse to the moral attributes of God; but it receives great additional force from considering him as our father and protector.

If it be said, that this desire is factitious, and the necessary effect of self-love: I answer, that all our other desires are factitious, and deducible from self-love, also; and that many of those which are gratified, proceed from a self-love of a grosser kind. Besides, self-love is only to be destroyed by, and for the sake of,

the love of God, and of our neighbour. Now the ultimate prevalency of these is a still stronger argument for a future life, in which we may first love God, and then our neighbour in and through him.

Fifthly, The pain which attends the child during its birth or passage into this world, the separation and death of the *placenta*, by which the child received its nourishment *in utero*, with other circumstances, resemble what happens at death. Since therefore the child, by means of its birth, enters upon a new scene, has new senses, and, by degrees, intellectual powers of perception, conferred upon it, why may not something analogous to this happen at death? Our ignorance of the manner in which this is to be effected, is certainly no presumption against it; as all who are aware of the great ignorance of man, will readily allow. Could any being of equal understanding with man, but ignorant of what happens upon birth, judge beforehand that birth was an introduction to a new life, unless he was previously informed of the suitableness of the bodily organs to the external world? Would he not rather conclude, that the child must immediately expire upon so great a change, upon wanting so many things necessary to his subsistence, and being exposed to so many hazards and impressions apparently unsuitable? And would not the cries of the child confirm him in all this? And thus we may conclude, that our birth was even intended to intimate to us a future life, as well as to introduce us into the present.

Sixthly, It would be very dissonant to the other events of life, that death should be the last; that the scene should conclude with suffering. This can scarce be reconciled to the beauty and harmony of the visible world, and to the general prepossessing of pleasure over pain, and subserviency of pain to pleasure, before-mentioned. All the evils of life, of which we are judges, contribute some way to improve and perfect us. Shall therefore the last which we see, and the greatest in our apprehensions, quite extinguish our existence? Is it not much more likely, that it will perfect all such as are far advanced, and be a suitable correction and preparatory to the rest? Upon supposition of a future eternal life, in which our happiness is to arise from the previous annihilation of ourselves, and from the pure love of God, and of our neighbour, it is easy to see how death may contribute more to our perfection, than any other event of our lives; and this will make it quite analogous to all the others. But that our lives should conclude with a bitter morsel, is such a supposition, as can hardly consist with the benevolence of the Deity, in the most limited sense in which this attribute can be ascribed to him.

Seventhly, All that great *apparatus* for carrying us from body to mind, and from self-love to the pure love of God, which the doctrine of association opens to view, is an argument that these great ends will at last be attained; and that all the imperfect

individuals, who have left this school of benevolence and piety at different periods, will again appear on the stage of a life analogous to this, though greatly different in particular things, in order to resume and complete their several remaining tasks, and to be made happy thereby. If we reason upon the designs of Providence in the most pure and perfect manner, of which our faculties are capable, *i. e.* according to the most philosophical analogy, we shall be unavoidably led to this conclusion. There are the most evident marks of design in this *apparatus*, and of power and knowledge without limits every where. What then can hinder the full accomplishment of the purpose designed? The consideration of God's infinite benevolence, compared with the prospect of happiness to result to his creatures from this design, adds great strength to the argument.

Eighthly, Virtue is, in general, rewarded here, and has the marks of the divine approbation; vice the contrary. And yet, as far as we can judge, this does not always happen; nay, it seems to happen very seldom, that a good man is rewarded here in any exact proportion to his merit, or a vicious man punished exactly according to his demerit. Now these apparent inequalities in the dispensations of Providence, in subordinate particulars, are the strongest argument for a future state, in which God may shew his perfect justice and equity, and the consistency of all his conduct with itself. To suppose virtue in general to be in a suffering state, and vice in a triumphant one, is not only contrary to obvious facts, but would also, as it appears to me, destroy all our reasoning upon the divine conduct. But if the contrary be laid down as the general rule, which is surely the language of Scripture, as well as of reason, then the exceptions to this rule, which again both Scripture and reason attest, are irrefragable evidences for a future state, in which things will be reduced to a perfect uniformity. Now, if but so much as one eminently good or eminently wicked person can be proved to survive after the passage through the gulph of death, all the rest must be supposed to survive also from natural analogy. The case of martyrs for religion, natural or revealed, deserves a particular consideration here. They cannot be said to receive any reward for that last and greatest act of obedience.

Ninthly, The voice of conscience within a man accusing or excusing him, from whatever cause it proceeds, supernatural impression, natural instinct, acquired associations, &c. is a presumption, that we shall be called hereafter to a tribunal; and that this voice of conscience is intended to warn and direct us how to prepare ourselves for a trial at that tribunal. This, again, is an argument, which analogy teaches us to draw from the relation in which we stand to God, compared with earthly relations. And it is a farther evidence of the justness of this argument, that all mankind in all ages seem to have been sensible of the force of it.

Tenthly, The general belief of a future state, which has prevailed in all ages and nations, is an argument of the reality of this future state. And this will appear, whether we consider the efficient or final cause of this general belief. If it arose from patriarchal revelations, it confirms the Scriptures, and consequently establishes itself in the manner to be explained under the next proposition. If it arose from the common parents of mankind after the flood, it appears at least to have been an antediluvian tradition. If mankind were led into it by some such reasons and analogies as the foregoing, its being general is a presumption of the justness of these reasons. The truth of the case appears to be, that all these things, and probably some others, concurred (amongst the rest, apparitions of the dead, or the belief of these, dreams of apparitions, and the seeming passage to and from another world during sleep, the body being also, as it were, dead at the same time); and that, as the other parts of the simple, pure, patriarchal religion degenerated into superstition and idolatry, so the doctrine of a future state was adulterated with fictions and fables, as we find it among the Greeks and Romans, and other pagan nations.

As to the Jews, their high opinion of themselves on account of the covenant made with their father Abraham, and repeated at Sinai, which in its first and literal sense was merely temporal, contributed probably to make the more gross and carnal amongst them overlook the doctrine of a future state, as attested either by reason or tradition. But when their captivity by Nebuchadnezzar, and other calamities, rendered this world contemptible and bitter to them, many, as the Pharisees and Essenes, had recourse in earnest to this great source of comfort; whilst others, adhering servilely to the letter of the law, expected only temporal prosperity under a victorious Messiah. However, it is not to be doubted, but that, before this, good Jews, particularly such as did, or were ready to, lay down their lives for the sake of religion, had the support of this belief; and it appears to me, that there are many things in the Old Testament, which both shew, that the doctrine of a future state was the current opinion among the Jews; and also that it was attended with far less expectations than amongst Christians; whence it might easily be overlooked and neglected by carnal minds, as above noted. Their hearts were set upon temporal prosperity, for themselves considered separately, for their nation, for their posterity; all which we must, however, suppose to be more suitable to their other circumstances, and to those of the world in general, when the whole of things is taken into consideration, than if they had had more full and magnificent expectations after death.

As to the final causes of the belief of a future state amongst mankind, if we suppose that these are either the better regulation of states, and the public happiness, or the private happiness of each individual, they would be strong arguments for the divine

benevolence, and consequently for a future state; even though it be supposed, that the efficient cause was only the invention of those men, who saw that this doctrine would be useful publicly and privately. For God must, at least, have permitted this; according to the doctrine of these papers, must have caused it.

But, without entering into this examination of the efficient or final causes, we may affirm, that the mere general prevalence of the doctrine of a future state is of itself a strong presumption of its truth. If it be true, it is natural, *i. e.* analogous to other things, to suppose that we should have some general expectation of it, just as in other cases, where we are nearly concerned; also that as mankind advance in knowledge and spirituality by the advanced age of the world, this doctrine should be more and more opened to them. Now this is the fact; the doctrine of a future state has, from the first memory of things in the post-diluvian world, been thus perpetually opened more and more. Therefore, *e converso*, it is probable, that the doctrine itself is true.

It may be objected to some of the arguments here alleged for a future state, that they are applicable to brutes; and therefore that they prove too much. To this we may answer, that the future existence of brutes cannot be disproved by any arguments, as far as yet appears: let therefore those which favour it be allowed their due weight, and only that. There are, besides those common to all animals, many which are peculiar to man, and those very forcible ones. We have therefore much stronger evidence for our own future existence than for that of brutes; which, again, is a thing very analogous to our circumstances. It is something more than mere curiosity, that makes benevolent persons concerned for the future welfare of the brute creation; and yet they have so much to do nearer home, for themselves, and their relatives, by way of preparation for a future state, that it would be a great misuse of time to dwell upon such foreign speculations.

The doctrine of transmigration may be considered as an argument for the future existence of all animals in one view; though a most pernicious corruption of the practical doctrine of a future state in another.

It may farther be objected to some part of the foregoing reasoning, that the destruction of vegetables in so many various ways, that few, relatively speaking, come to perfection, with the many irregularities of the natural world, shew that God does not, in fact, bring all his works to perfection. I answer, that if vegetable life be not attended with sensation (and we do not at all know that it is), this, with infinite other phenomena of a like kind, may be no irregularity at all. The inanimate world may, according to the present constitution of things, however irregular that may seem to us, serve, in the best possible manner, to promote the happiness of the animate. We are apt to estimate

maturity in natural productions according to very narrow relative considerations. But, in truth, that herb or fruit is mature, which has answered its end in respect of animal life, the support, for instance, of a peculiar set of insects; and if the particles of inanimate matter thus pass through the bodies of vegetables and animals in an endless revolution, they may perform all the offices intended by God: or he may have fitted them for infinite other uses and offices, of which we know nothing.

But if vegetables have sensation, which may indeed be a speculation very foreign to us, but is what we cannot disprove, then vegetables may be provided for in the same manner as animals. Or, if we suppose the argument to fail here, still animals, *i. e.* those allowed by all to be so, may live hereafter, though no vegetables do identically, and few according to the ordinary course of propagation by their seeds or shoots: or the argument may fail in respect of brute animals, and extend to man alone.

PROP. LXXXVII.—*The Christian Revelation gives us an absolute Assurance of a Future State.*

THAT the reader may see more fully the degree of evidence afforded by the Scriptures to this most important doctrine, I will here make the following observations.

First, then, A future state is the plain and express doctrine of the New Testament, in the obvious and literal sense of the words. It rests therefore upon the authority of the revelation itself. Hence all the miracles of Christ and his apostles, and, by consequence, of Moses and the prophets, all the prophecies of the Scriptures, whose accomplishment is already past, and visible to us, become pledges and attestations of the truth of this doctrine. We cannot suppose that God would have given such powers and evidences, as must necessarily propagate and establish this doctrine, were it not true. For this is the grand, and, as we may say, the only doctrine of the New Testament, and even of the Old when interpreted by the New, as it ought to be.

And, as this is the most convincing evidence even to philosophical persons, so it is almost the only one which can affect and satisfy the vulgar. But indeed what resource can any man have in things above his capacity, besides resting on those who have evidently more power, knowledge, and goodness, than himself, who have worked miracles, foretold things to come, preached and practised righteousness?

All the miracles of both the Old and New Testament were performed by Christ in effect, *i. e.* by his power and authority. He therefore must be able to preserve us from perishing utterly; and the predictions of future states in this world, which God gave to him, and he to his servant John and others, both before and

after his coming, shew, by their accomplishment, that all his other predictions, and especially the great one of a resurrection to life eternal, will also be accomplished in due time.

Secondly, The persons brought back to life again in the Old and New Testaments, and, above all, the resurrection of Christ himself, have a great tendency to strengthen the foregoing argument, and to remove all our doubts, fears, and jealousies, concerning the reality of a future state. The same may be said of the histories of Enoch and Elijah, and of the appearance of Moses and Elijah at Christ's transfiguration. As there are no footsteps back again from the grave to life, our imagination staggers, and our faith stands in need of a sensible as well as rational support.

Thirdly, The great readiness of the prophets and apostles, and of other good Jews and Christians after their example, to suffer death for the sake of their religion, is a singular comfort and encouragement to us. We are sure from hence, that they believed a future state themselves; and they could not but know whether or no they had the power of working miracles, had seen Christ after his death, had received divine communications, &c. They must therefore have been possessed of these undeniable evidences for a future state; they could neither be deceived themselves in this matter, nor deceive others.

Fourthly, The whole history and institutions of the Jewish people, when interpreted by Christianity, are types and prophecies of a future state. And here the Old and New Testaments confirm and illustrate each other in the strongest manner: and the Old Testament, when interpreted by the New, becomes entirely spiritual, and equally expressive, with the New, of the doctrine of a future state. It may be observed of the Psalms particularly, that the spiritual interpretation is to us, in the present times, more easy and natural upon the whole, than the literal and temporal one.

Fifthly, If we compare what was advanced above, concerning the elementary infinitesimal body, with the scripture doctrine of the resurrection of the body, and particularly with St. Paul's account of it, 1 Cor. xv. there will appear such a harmony and coincidence between the evidences from reason and those from Scripture, as will greatly confirm both.

PROP. LXXXVIII.—*The Rewards and Punishments of a future Life will far exceed the Happiness and Misery of this, both in Degree and Duration.*

HERE I will first consider the suggestions of the light of reason; secondly, the declarations of the Scriptures.

First, then, As man appears, according to the light of reason, to be in a progressive state, it may be conjectured, or even presumed, that the rewards and punishments of a future life will

exceed that happiness and misery, which are here the natural consequences of virtue and vice. However, the light of reason is not clear and certain in this point: neither can it determine, whether the happiness and misery of the next life will be pure and unmixed, or no. It may indeed shew, that each man will receive according to his deserts; but then, since there is no pure virtue or vice here, since also there may be room for both virtue and vice hereafter, the rewards and punishments of the next life may succeed each other at short intervals, as in the present: or, if we adopt the mechanical system throughout, then we can only hope and presume, that God will ultimately make the happiness of each individual to outweigh his misery, finitely or infinitely; and shall be entirely uncertain, whether or no, at the expiration of this life, we shall pass into another, in like manner, chequered with happiness and misery: and thus one of the principal motives of virtue and piety would be lost.

It is true, indeed, that the heathens had their Elysium and Tartarus; but then these doctrines were probably the corrupted remains of some traditionary revelation; and so contribute to strengthen the real doctrine of the Scriptures on this head, which I am to set forth in the next place.

The Scriptures then represent the state of the good hereafter, as attended with the purest and greatest happiness; and that of the wicked as being exquisitely and eternally miserable. And though the words translated *eternal* and *for ever*, in the Old and New Testaments, do not seem to stand for an absolute metaphysical infinity of duration, as we now term it, yet they certainly import a duration of a great relative length, and may import any long period of time, short of an absolute eternity. The Scriptures, therefore, in their declarations concerning the degree and duration of future rewards and punishments, lay before us the strongest motives to obedience; such as, if duly considered, would rouse and alarm our hopes and fears, and all our faculties, to the utmost; excite to the most earnest prayers; and mortify instantly to the things of this world.

Now, though reason cannot discover this to us, or determine it absolutely, as just now remarked; yet it approves it, when discovered and determined previously. At least, it approves of the pure and indefinite happiness of the good, and acquiesces in the indefinite punishment of the wicked. For we always seem ready to expect a state of pure holiness and happiness from the infinite perfection of the Deity; and yet the present mixture of happiness with misery, and of virtue with vice, also any future degree of vice and misery, may be reconciled to infinite perfection and benevolence, upon supposition that they be finally overpowered by their opposites: or, if we consult the dictates of the moral sense alone, without entering into the hypothesis of mechanism, the pure misery of the wicked, under certain limitations as to degree and duration, may be reconciled to the mercy of God, and

will be required by his justice. But the moral sense was certainly intended to warn us concerning futurity.

It will not be improper here to remark, that the Scriptures favour our first notions concerning pure virtue and happiness, by the mention of a paradisiacal state, as the original one in which man was placed; and by representing our future happiness as a restoration to this state. They take notice therefore of that greatest of all difficulties, the introduction of evil into the works of an infinitely benevolent Being; and by ascribing it to sin, the thing which is most opposite to God, raise an expectation that it must be entirely overcome at last.

PROP. LXXXIX.—*It is probable, that the future Happiness of the Good will be of a spiritual Nature; but the future Misery of the Wicked may be both corporeal and mental.*

THESE are points in which the Scriptures have not been explicit. It is, therefore, our duty to beware of vain curiosity, and to arm ourselves with a deep humility. We are not judges what degree of knowledge is most suited to our condition. That there will be a future state at all, has not been discovered, with certainty, to a great part of mankind; and we may observe in general, that God conceals from us all particular things of a distant nature, and only gives us general notices of those that are near; and sometimes not even so much as this, where a peculiar duty or design of Providence requires otherwise. However, as we are obliged to read and meditate upon the Scriptures, to examine our own natures, and to compare them with the Scriptures, we seem authorized to make some inquiry into this high and interesting point.

Now it appears from the foregoing theory, as well as from other methods of reasoning, that the love of God, and of his creatures, is the only point in which man can rest; and that the first, being generated by means of the last, does afterwards purify, exalt, and comprehend it. In like manner, the Scriptures place our ultimate happiness in singing praises to God, and the Lamb; in becoming one with God, and members of Christ, and of each other; which phrases have a remarkable agreement with the foregoing deductions from reason: and we seem authorized to conclude from both together, that the future happiness of the blessed will consist in contemplating, adoring, and loving God; in obeying his commands; and, by so doing, ministering to the happiness of others, rejoicing in it, and being partakers of it.

It seems probable also, both from some passages of the Scriptures, and from the analogy of our natures, that our attachments to dear friends and relations, for whom we are *not to sorrow as they that have no hope*, and our esteem and affection for eminently pious persons in former ages, for Abraham, Isaac, and

Jacob, and *the spirits of other just men made perfect*, will still subsist on our arrival at the true *Mount Sion*, and *the heavenly Jerusalem*.

It may be conjectured farther, that the glorified body will not be capable of pleasures that may be called corporeal, in the same sense as the present bodily pleasures are; but only serve as the eye and ear do to spiritual religious persons; *i. e.* be a mere instrument and inlet to the refined pleasures of benevolence and piety.

Is it not probable, that this earth, air, &c. will continue to be the habitations of the blessed? It seems to me, that a very wonderful agreement between philosophical discoveries and the Scriptures will appear hereafter. Some instances, and many hints, of this agreement may be seen in Mr. Whiston's works. Only let us always remember, that we must think and speak upon the things of another world much more imperfectly than children do concerning the pleasures, privileges, and occupations of manhood.

With respect to the punishments of the wicked in a future state, we may observe, that these may be corporeal, though the happiness of the blessed should not be so. For sensuality is one great part of vice, and a principal source of it. It may be necessary therefore, that actual fire should feed upon the elementary body, and whatever else is added to it after the resurrection, in order to burn out the stains of sin. The elementary body may also perhaps bear the action of fire for ages, without being destroyed, like the *caput mortuum*, or *terra damnata*, of the chemists. For this *terra damnata* remains after the calcination of vegetable and animal substances by intense and long-continued fires. The destruction of this world by fire, spoken of both in the Scriptures and in many profane writings, the phænomena of comets, and of the sun and fixed stars, those vast bodies of fire, which burn for ages, the great quantity of sulphureous matter contained in the bowels of the earth, the destruction of Sodom and Gomorrah by fire and brimstone, alluded to in the New Testament, the representation of future punishment under the emblem of the fire of Gehenna, and, above all, the express passages of Scripture, in which it is declared that the wicked shall be punished by fire, even everlasting fire, confirm this position concerning the corporeal nature of future punishment, as well as give light to one another.

The same considerations confirm the long duration of future punishment. For if the earth be supposed to be set on fire, either by the near approach of a comet, or by some general fermentation in its own bowels, just as the deluge was caused partly by waters from the heavens, partly by those of the great deep, it may burn for many revolutions, either in a planetary or a cometary orbit; and these may be the *ages of ages*, spoken of in the Apocalypse. Farther, if the duration of Christ's reign upon

earth for a thousand years be estimated, as interpreters have with apparent reason estimated other durations in the prophetic writings, by putting a day for a year, then will this reign continue for 360,000 years. And since it appears to be previous to the punishment in the lake of fire, and limited, and whereas that punishment is to endure *for ages of ages*, that is, for an indefinitely long period of time, one may perhaps conjecture, that this punishment is to be of longer duration than the reign of Christ upon earth for 360,000 years. But these things are mere conjectures. God has not been pleased to discover the kind, degree, or duration of future punishment in explicit terms. However, the sacred writings concur every where with the voice of reason in alarming us to the utmost extent of our faculties, lest we come into that place of torment. The punishments threatened to the body politic of the Jews have fallen upon it in the heaviest and most exemplary manner. The Jews, considered as a body politic, have now been in a state of suffering, without any interval of relaxation, for almost 1700 years; during which time they have been like Cain the elder brother, who slew Abel, because he was more righteous than himself, and his sacrifice more acceptable than his own, fugitives and vagabonds over the face of the earth: they have been persecuted and slain every where, having the indelible mark of circumcision set upon them, to which they still adhere most tenaciously, and which has been a principal means of preventing their apostatizing from their own religion, after they grow up to adult age. And this may serve as a type and evidence of the certainty and greatness of future punishment, shewing that it will be greater, and more lasting, than human foresight could possibly have conjectured; just as their final restoration seems to presage the final redemption and salvation of the most wicked. And therefore, according to the earnest and affectionate admonition of our Saviour, *he that hath ears to hear, let him hear.*

But if the punishments of another world should be corporeal in some measure, there is still the greatest reason to believe that they will be spiritual also; and that by selfishness, ambition, malevolence, envy, revenge, cruelty, profaneness, murmuring against God, infidelity, and blasphemy, men will become tormentors to themselves, and to each other; deceive, and be deceived; infatuate, and be infatuated; so as not to be able to repent, and turn to God, till the appointed time comes, if that should ever be.

But we are not to suppose, that the degree, probably not the duration, of future punishment, corporeal or mental, will be the same to all. It may also perhaps be, that there may be some alleviating circumstances, or even some admixture of happiness. Only the Scriptures do not authorize any such conjectures; and therefore we ought to proceed with the utmost caution, lest we lead ourselves or others into a fatal mistake. And indeed, if the

happiness of the blessed be pure and unmixed, as the Scriptures seem to declare, and reason to hope, then may the misery of the wicked be unmixed also. Nevertheless, since the goodness of God has no opposite, analogy does not here require that conclusion.

PROP. XC.—*It seems probable, that the Soul will remain in a State of Inactivity, though perhaps not of Insensibility, from Death to the Resurrection.*

SOME religious persons seem to fear, lest by allowing a state of insensibility to succeed immediately after death, for some hundreds or perhaps thousands of years, the hopes and fears of another world should be lessened. But we may affirm, on the contrary, that they would be increased thereby. For time, being a relative thing, ceases in respect of the soul, when it ceases to think. If therefore we admit of a state of insensibility between death and the resurrection, these two great events will fall upon two contiguous moments of time, and every man enter directly into heaven or hell, as soon as he departs out of this world, which is a most alarming consideration.

That the soul is reduced to a state of inactivity by the deposition of the gross body, may be conjectured from its entire dependence upon the gross body for powers and faculties, in the manner explained in the foregoing part of this work. It seems from hence, that neither the elementary body, nor the immaterial principle, which is generally supposed to preside over this, can exert themselves without a set of suitable organs. And the Scriptures of the New Testament, by speaking of the resurrection of the body as synonymous to a future life, favour this conjecture. There are also many passages in the Old Testament, and some in the New, which intimate death to be a state of rest, silence, sleep, and inactivity, or even of insensibility. However, there are other passages of Scripture which favour the opposite conjecture. It seems also, that motion, and consequently perception, may not cease entirely in the elementary body after death; just as in the seeds of vegetables there is probably some small intestine motion kept up, during winter, sufficient to preserve life, and the power of vegetation, on the return of the spring. And thus the good may be in a state of rest, tranquillity, and happiness, upon the whole rather pleasant than painful, and the wicked in a contrary state. Some imperfectly good persons may also receive what remains of the necessary purification, during the interval between death and the resurrection. And, upon the whole, we may guess, that though the soul may not be in an insensible state, yet it will be in a passive one, somewhat resembling a dream; and not exert any great activity till the resurrection, being perhaps roused to this by the fire of the conflagration. For analogy seems to intimate, that the resurrection will be

effected by means strictly natural. And thus every man may rise in his own order, agreeably to the words of St. Paul.

However, let it be remembered, that all our notions concerning the intermediate state are mere conjectures. It may be a state of absolute insensibility on one hand, or of great activity on the other. The Scriptures are not explicit in this matter, and natural reason is utterly unequal to the task of determining it. I have just hinted a middle opinion, as being more plausible perhaps than either extreme. Such inquiries and disquisitions may a little awaken the mind, and withdraw it from the magical influences of this world: and, if the children of this world find a pleasure and advantage in ruminating upon their views and designs in it, much more may the children of another world, by making that the subject of their meditations and inquiries.

SECT. IV.

THE TERMS OF SALVATION.

WE have seen in the foregoing Section the greatness of the rewards and punishments of a future life. Now this is a point of infinite importance to us to be practically and duly considered. It is of infinite practical importance to come within the terms of salvation at the day of judgment. Though all God's creatures should be made happy at last indefinitely, yet still there is in the way in which we do, and must, and ought to conceive of these things, an infinite practical difference, whether at the resurrection we enter into the *new Jerusalem*, and the *kingdom of heaven*, or whether we be cast into the *lake of fire, whose smoke ascendeth up for ever and ever*. Let us inquire therefore, what are the terms of salvation after this short life is ended, *i. e.* what degree of purity and perfection is required of us here, in order to be rescued from the miseries of another world, and advanced into the glorious mansions of the blessed.

PROP. XCI.—*It follows from the foregoing Theory of our intellectual Pleasures and Pains, that the Bulk of Mankind are not qualified for pure unmixed Happiness.*

FOR the bulk of mankind are by no means so far advanced in self-annihilation, and in the love of God, and of his creatures in and through him, as appears, from the tenor of the foregoing observations, to be required for the attainment of pure happiness. There are few, even in christian countries, that so much as know

what the true religion and purity of the heart is; at least, that attend to it with care and earnestness: and in pagan countries still fewer by far. How exceedingly few then must that *little flock* be, whose wills are broken and subjected to the divine will, who delight in happiness wherever they see it, who look upon what concerns themselves with indifference, and are perpetually intent upon their Father's business, in any proper sense of these words! And as experience shews us, that men are not carried from worldly-mindedness to heavenly-mindedness, nor advanced from lower degrees of the last to higher in general, but by passing through pain and sorrow; so there is the greatest reason from the mere light of nature to apprehend, that the bulk of mankind must suffer after death, before they can be qualified for pure and spiritual happiness. If what we have felt here do not cure us of sensuality, selfishness, and malevolence, there is the greatest reason from analogy to apprehend, that severer punishments will be applied hereafter for that purpose.

PROP. XCII.—*It follows from the Declarations of the Scriptures, that the Bulk of Mankind are not qualified for the Mansions of the Blessed.*

FOR, according to the Scriptures, *the gate that leadeth to life is strait, and there are few who find it*, even though they seek to enter in. The righteousness of the Scribes and Pharisees, of the formal professors, who yet are no adulterers, extortioners, &c. will not be in any wise sufficient. *Many are called, and but few chosen*; and, agreeably hereto, the first-fruits, which are a scripture type of the chosen or elect, are small in comparison of the lump. In like manner, the Jews are few in comparison of the Gentiles; the 144,000, in comparison of all the tribes; the Israelites, in comparison of all Abraham's seed; Elijah, and the 7000, in comparison of the priests and worshippers of Baal. Thus also Noah, and his family, alone, were preserved at the deluge; and of the Israelites a remnant only is saved, whilst the rest are rejected. And the reason of this smallness of the elect, the thing here typified, appears from the conditions. For we must take up our cross daily, hate father and mother, and even our own lives; else we cannot be Christ's disciples. We cannot serve God and Mammon together. We must seek the kingdom of God, and his righteousness, first; hunger and thirst after it; and leave all to follow Christ. We must be born again, *i. e.* have quite new dispositions, and take pleasure in works of piety and charity, as we formerly did in sensual enjoyments, in honour and profit; we must be transformed by the renewal of our minds, walk according to the Spirit, have our hearts in heaven, and do all to the glory of God. We must pray always; rejoice in tribulation; count all things as dung in comparison of the knowledge of Christ, and him crucified; clothe the naked, feed the

hungry, visit the sick, preach the gospel in all nations. If there be strife or vain-glory, schisms or divisions, amongst us, we are still carnal. If there be wrath, clamour, evil-speaking, covetousness, we cannot inherit the kingdom of God. If we govern not our tongues, we deceive ourselves; our religion is vain. The lust of the flesh, the lust of the eye, and the pride of life, are inconsistent with the love of the Father, *i. e.* with happiness, with freedom from tormenting fear. Though we give all our goods to feed the poor, and our bodies to be burnt, even suffer martyrdom, it profiteth nothing, unless we have that charity, that love, which seeketh not her own, but rejoiceth in the truth, &c. *i. e.* unless we become indifferent to ourselves, and love God, and his truth, glory, and goodness, manifested in his creatures, alone. This world, with the bulk of its inhabitants, is all along in Scripture represented as doomed to destruction, on account of the degeneracy, idolatry, wickedness, which every where prevail in it. The true Jews and Christians are a separate people, in the world, not of the world, but hated and persecuted by it, because they shine as lights *in the midst of a crooked and perverse generation*, which cannot bear the light, &c. &c. for it would be endless to transcribe texts to this purpose. If a man has but courage to see and acknowledge the truth, he will find the same doctrine expressed or implied in every part of the Bible.

PROP. XCIII.—*To apply the foregoing Doctrine, as well as we can, to the real Circumstances of Mankind.*

HERE we may observe, First, That, lest the best of men, in considering the number and greatness of their sins, and comparing them with the purity of the scripture precepts, and the perfection of God, should not dare to look up to him with a filial trust and confidence in him; lest their hearts should fail, Christ our Saviour is sent from heaven, God manifest in the flesh, that whosoever believeth in him should not perish, but have everlasting life; that, though our sins be as scarlet, they should by him, by means of his sufferings, and our faith, be made as white as wool; and the great punishment, which must otherwise have been inflicted upon us according to what we call the course of nature, be averted. Faith then in Christ the righteous, will supply the place of that righteousness, and sinless perfection, to which we cannot attain.

Secondly, And yet this faith does not make void the law, and strict conditions, above described; but, on the contrary, establishes them. For no man can have this faith in Christ, but he who complies with the conditions. To have a sense of our sins, to be humble and contrite, and in this state of mind to depend upon Christ as the mediator between God and man, as able and willing to save us, which is true faith, argues such a disposition as will shew itself in works. And if our faith fall short of

this, if it do not overcome the world, and shew itself by works, it is of no avail; it is like that of the devils, who *believe and tremble*. Men must labour therefore after this faith as much as after any other christian grace, or rather as much as after all the others; else they cannot obtain it. For it contains all the other christian graces; and we can never know that we have it, but by our having the christian graces, which are its fruits.

Thirdly, Hence it follows, that a mere assurance, or strong persuasion, of a man's own salvation, is neither a condition, nor a pledge of it. The faith above described *is*; and so are all other christian graces, love, fear, trust, repentance, regeneration, &c. when duly advanced and improved, so as to beget and perfect each other. But there is great reason to fear, both from the foregoing theory of the human mind, and from plain experience, that such a strong persuasion may be generated, whilst men continue in many gross corruptions; and that especially if they be first persuaded that this strong persuasion or assurance of salvation is a condition and pledge of it, and be of sanguine tempers. For, if they be of fearful and melancholy ones, a contrary effect may be expected. All this appears from the foregoing theory of assent and dissent. Eager desires are attended with hope in the sanguine, the vain-glorious, and the self-conceited; and this hope, as it increases, becomes a comfortable assurance and persuasion, drawing to itself by degrees the inward sentiments that attend upon assent. On the contrary, eager desires in the scrupulous, superstitious, and dejected, end in fear and dissent. But if this dejection should pass into the opposite state, then the anxious diffidence may at once, as it were, pass into its opposite, a joyful persuasion.

But the chief thing to be observed here is, that the Scriptures no where make an assurance of salvation the condition or pledge of it. Unless therefore it could be shewn to be included in faith, love, fear, and other scriptural conditions, the doctrine of assurance, as it seems to be taught by some persons, cannot be justified by the Scriptures. But all the christian graces may exist without an explicit assurance of, or even reflection upon, a man's own salvation; and fear, in particular, does not admit of this assurance. At the same time it ought to be remembered, that all acts of faith, love, trust, gratitude, exercised towards God, leave peace and comfort in the mind; and that the frequent meditation upon the joys of another life, as our hope and crown, will excite us powerfully to obedience. We ought therefore to labour and pray most earnestly for the perpetual increase of the hope of salvation; yet waiting patiently for it, if it should be delayed through bodily indisposition, or any other cause.

Fourthly, If it be asked, where the privilege and advantage of faith lies, since works are necessary also, according to the foregoing account of it; I answer, First, That the righteousness and sufferings of Christ, with our faith in them, are necessary to

save us from our sins, to enable us to perform our imperfect righteousness; and, Secondly, That faith is proposed by the Scriptures as the means appointed by God for rendering imperfect righteousness equivalent, in his sight, to perfect, and even of transforming it into perfect, as soon as we are freed from that body of flesh and death, which wars against the law of our minds. And as faith thus improves righteousness, so every degree of righteousness is a proportional preparative for faith; and if it do not produce faith, will end in self-righteousness, and *Satanical* pride.

Fifthly, If it be alleged, in favour of the doctrine of justification by faith alone, and exclusively of works, that if the greatest sinner should in the midst of his sins and impieties, stop at once, and, with a deep sense of them, earnestly desire forgiveness of God through Christ, firmly believing in him as his Saviour, we cannot suppose that God would reject him; I answer, that this deep sense of sin, this earnest prayer, and firm belief, are things not to be attained in a short space of time, according to the usual course of nature. A sinner cannot be stopped at all in the career of his sins, but by suffering; and there may indeed be a degree of suffering so great, as to work the due contrition in any given short interval of time, according to the course of nature. But it does not appear from experience, that an effectual reformation is generally wrought in great sinners by common calamities, nor even by very severe ones; though the suffering, one may hope, is not lost; but will here or hereafter manifest its good effects. However, some few there are, who, recovering from a dangerous sickness, or other great affliction, shew that their change of mind was of a permanent nature; that they were made *new creatures*; and that they had a real practical faith, sufficient to overcome the world, generated in them. Now, such a faith, though it have not time to evidence itself by works, will undoubtedly be accepted by God; since he knows that time alone is wanting.

Sixthly, It will be asked then, what are we to do for those unhappy persons, who have neglected to make use of the means of grace in due time, and who are seized by some fatal diseases in the midst of their sins? I answer, that we must exhort them to strive to the utmost, to pray that they may pray with faith, with earnestness, with humility, with contrition. As far as the dying sinner has these graces, no doubt they will avail him, either to alleviate his future misery, or to augment his happiness. And it seems plainly to be the doctrine of the Scriptures, that all that can be done, must be done in this life. After death we enter into a most durable state of happiness or misery. We must here, as in all other cases, leave the whole to God, who judgeth not as man judgeth. Our compassion is as imperfect and erroneous, as our other virtues, especially in matters where we ourselves are so deeply concerned. The greatest promises are made to fervent prayer. Let therefore not only the dying

person himself, but all about him, who are thus moved with compassion for him, fly to God in this so great distress; not the least devout sigh or aspiration can be lost. God accepts the widow's mite, and even a cup of cold water, when bestowed upon a disciple and representative of Christ. And if the prayer, love, faith, &c. either of the sinner himself, or of any one else, be sufficiently fervent, he will give him repentance unto salvation. But how shall any of us say this of ourselves? This would be to depend upon ourselves, and our own abilities, instead of having faith in Christ alone.

These awakening considerations may be thought to lead to despair. But then despair arising from them appears to be infinitely safer, than that enthusiastic faith, or rather presumption, which is sometimes the consequence of the doctrine of justification by faith alone. If indeed a man's despair should make him neglect God in his last moments, put away the thoughts of his sins, and harden himself in a careless stupidity with respect to his future condition, this would be the worst state on this side the grave. But it is evident, that the foregoing considerations have no such tendency. Where a man is so terrified, that, like David, his heart fails him, or, like the publican, he dares not look up; that he does not think himself worthy of the high title of the child of God, or of admission into the kingdom of heaven: all these emotions, all the agonies of this kind of despair, have a great tendency to better him, to purify and perfect him, to humble him, to break his stubborn will; and though he should not be able to pray but by the *groanings that are unutterable*, God, who knows the mind of the spirit, which is now working in him *a repentance not to be repented of*, *i. e.* if these groanings be sufficiently earnest, will accept him. If they fall short of the gospel terms, whatever these be, he will, however, be beaten with fewer stripes. And it must be remembered, that the question is not whether a man shall die here in apparent peace, so as to comfort the friends and by-standers under their alarming sense of fear for themselves, and compassion for him, but whether he shall awake in joy or torment. The despair which arises from a fear lest our remaining disposition to sin be so great, our faith and love so weak, and our prayer so languid, as that we do not come up to the gospel terms, is no offence against the divine goodness. We are to estimate this goodness in its particular manifestations by God's promises alone; and to do otherwise, would be to open a door to all wickedness, and lead ourselves into the most fatal mistakes. The Scriptures declare, in the most express terms, that works are necessary to salvation. Faith is never said to be effectual, when not attended by works; but, on the contrary, the true faith is emphatically characterised by its producing works. This faith is itself a work, as much as any other, the cause and the effect of the others, all proceeding from one universal cause through Christ. How then

can we flatter ourselves, that a mere strong persuasion or assurance of salvation, of the application of Christ's merits to a man's self in particular, will be of any avail? Especially since it is evident, from the nature of the mind, that such a persuasion may be generated in a wicked man; and also from experience, that it is sometimes found in such.

I have here endeavoured to treat this most important subject with the greatest fidelity, and regard to truth. God's ways are indeed infinitely above our ways, *i. e.* infinitely more merciful in reality, ultimately, than we can express or conceive. But all the threatenings of the Scriptures have been fulfilled hitherto, as well as the promises. *There is no peace to the wicked.* The faith, which removeth mountains, availeth nothing without charity. *Not he that saith unto Christ, Lord, Lord, i. e.* merely applies to him for mercy and assistance, *but he that doth the will of God, shall enter into the kingdom of heaven.* And we must not, we cannot, explain away these express passages.

As in the body, so in the mind, great and lasting changes are seldom wrought in a short time; and this the history of association shews to be the necessary consequence of the connexion between body and mind. And yet he who made the blind to see, the lame to walk, the deaf to hear, the lepers clean, and the maimed whole, by a word, can as easily perform the analogous things, the antitypes, in the mind. But then it is to be observed, that the bodily changes by miracles were not made by our Saviour, except in consequence of previous changes in the mind. And thus indeed to *him that hath shall be given, and he shall have more abundantly.* Love, faith, fear, prayer, will carry men on in a very rapid progress. But then the work of regeneration is already advanced in them. It is of infinite consequence not to lay a stumbling-block, or rock of offence, in our own way, or in that of others; not to *break the least commandment, or teach others so to do.* Let us *not be deceived, God is not mocked; what a man soweth, that shall he also reap.* *Indignation and wrath, tribulation and anguish, must come upon every soul of man that does evil, upon every child of disobedience.*

Seventhly, It follows from the purity of the scripture precepts, that even the better sort of Christians may be under considerable uncertainties as to their own state; and that in many cases, as a man grows better, and consequently sees more distinctly his own impurity, he will have greater fears for himself, and perhaps think that he grows worse. Now the final cause of this is undoubtedly, that we may make our calling and election sure, and lest he that thinketh he standeth should fall. And yet, as wicked persons, let them endeavour ever so much to stupify themselves, must have frequent forebodings of the judgment that will be past upon them at the last day; so good persons will generally have great comforts in the midst of their sorrows. The scripture promises are so gracious and unlimited, the precepts for loving God, and

rejoicing in him, so plain and express, and the histories of God's mercies towards great sinners, and the great sins of good men, are so endearing, that whoever reads and meditates upon the Scripture daily, will find *light spring up to him in the midst of darkness; will hope against hope, i. e.* will hope for the mercy of God, though he has the greatest doubts and fears in relation to his own virtue, faith, love, and hope; and fly to him, as his Father and Saviour, for that very reason. This will beget earnest and incessant prayer, a perpetual care not to offend, and a reference of all things to God. When such a person surveys his own actions, and finds that he does in many instances of thought, word, and deed, govern himself by the love and fear of God, by a sense of duty, by the gospel motives of future reward and punishment, &c. these are to him evident marks that the Spirit of God works with his spirit; he is encouraged to have confidence towards to God; and this confidence spurs him on to greater watchfulness and earnestness, if he does not dwell too long upon it. When, on the other hand, he finds many unmortified desires, and many failings in his best words and actions, with some gross neglects perhaps, or even some commissions, this terrifies and alarms him; adds wings to his prayers, and zeal to his endeavours. And it is happy for us, in this world of temptations, to be thus kept between hope and fear. Not but that very good persons, who have been constant and earnest for a long course of time, who have passed through severe trials, who live, as the first Christians did, in perpetual apprehensions of sufferings and death, or who, like their blessed Lord and Master, go about doing good, and preaching the gospel to the poor, may be always favoured with the sight of the promised land; and several of these may date the rise of this happy state from some remarkable point in their lives. But there is great danger of being imposed upon here by the wonderful subtlety of the natural operations of the mind. When a man begins to fancy that an inward sentiment, much or long desired by him, such as the assurance of his salvation, has happened or will happen to him, this imposes upon his memory by imperceptible degrees in one case; and begets the sentiment itself, the assurance, in the other. Such a factitious assurance can therefore be no evidence for itself. It is a mental affection, of the same kind with the rest; and can less be depended upon, as a test, than plain actions. Mere ideas, and internal feelings, must be less certain marks of the prevailing, permanent disposition of our hearts, than the tenor of our actions, which is the natural and necessary fruit of it. And we ought to judge of ourselves by our fruits, as well as of those who pretend to be prophets. *A good tree cannot bring forth evil fruit, nor an evil tree good fruit.* Here we may lay our foundation, as upon a rock. When indeed this persuasion, or assurance, is the result of an earnest impartial examination into our fruits, and of our conscience not condemning us, it may reasonably afford confidence

towards God, because our conscience was intended by God to inform us of our state; as appears both from Scripture and reason. But a constant absolute assurance, *i. e.* appearance thereof, (for it can be no more, till we have escaped all the hazards of this life, and our Judge has passed his sentence upon us in another,) may be dangerous even to good men, and render them by insensible degrees secure, neglectful of necessary duties, and self-conceited. However, since a hope, free from all anxious fears, seems to be often given by God as a comfort in great trials, and a reward for behaving well under such, and persevering faithfully, as I observed just now; we have the greatest encouragement to do and to suffer every thing that God requires of us, to be *fervent in spirit, serving the Lord, to watch and pray always, &c.* since we may expect to obtain this hope thereby, and in it an hundred fold for all that we give up in this world, as well as everlasting life in the world to come.

And though it be proper to comfort religious persons under bodily or mental disorders, which fill their minds with disproportionate fears and scruples, by informing them, that a solicitude about our salvation is the sure means of obtaining it; that this affliction is to be endured with patience, and confidence in God, as much as any other; that it is attended with the same advantages as common afflictions, and also with some peculiar to itself, such as putting us upon a thorough examination of our hearts; and that this severe chastening in the present world is the strongest mark that we are loved by God, and therefore should be saved in the world to come: yet the same persons are to be admonished, that a great degree of fearfulness and scrupulosity often proceeds from some self-deceit and prevarication at the bottom. There is probably some secret sin, some sin that circumvents them more easily and frequently than the rest, of which they may not perhaps be fully aware, and yet about which they have great suspicions and checks, if they would hearken to them fully and fairly. They ought therefore, with all earnestness and honesty, to desire God to try and examine them, and to seek the ground of their hearts; and, in consequence of this prayer, to set about it themselves in the presence of God. And if this be necessary for the scrupulous and feeble-minded, even for the children of God, how much more for the careless, voluptuous, profane world! How ought they to be alarmed and exhorted to hear the voice of wisdom in the present life, during *the accepted time, lest fear come upon them as desolation, and destruction as a whirlwind!*

Lastly, We may observe, that as undue confidence leads to security, and consequently to such sins as destroy this confidence, unless we be so unhappy as to be able to recall the internal feeling of this confidence without sufficient contrition; and as the disproportionate fearfulness, which is its opposite, begets vigilance, and thus destroys itself also; whence persons in the progress of

a religious course are often passing from one extreme to another; so it is difficult for serious persons, in thinking or speaking about the terms of salvation, to rest in any particular point: they are always apt to qualify the last decision, whatever it be, either with some alarming caution, or comfortable suggestion, lest they should mislead themselves or others. This is part of that obscurity and uncertainty, which is our chief guard and security in this state of probation, and the *daily bread* of our souls. Let me once more add this necessary observation; *viz.* that future eternal happiness is of infinitely more weight than present comfort; and therefore that we ought to labour infinitely more after purity and perfection, than even after spiritual delights. We are only upon our journey through the wilderness to the land of Canaan; and, as we cannot want manna from day to day for our support, it is of little concernment, whether we have more delicious food. Let us therefore *hunger and thirst after righteousness* itself; that so we may first *be filled* with it, and afterwards, in due time, may obtain that *eternal weight of glory*, which will be the reward of it.

SECT. V.

THE FINAL HAPPINESS OF ALL MANKIND IN SOME DISTANT FUTURE STATE.

PROP. XCIV.—*It is probable from Reason, that all Mankind will be made ultimately happy.*

FOR, first, It has been observed all along in the course of this work, that all the evils that befall either body or mind in this state, have a tendency to improve one or both. If they fail of producing a peculiar, appropriated, intermediate good effect, they must, however, necessarily contribute to the annihilation of that *self*, carnal or spiritual, gross or refined, which is an insuperable bar to our happiness in the pure love of God, and of his works. Now, if we reason at all concerning a future state, it must be from analogies taken from this; and that we are allowed to reason, that we are able to do it with some justness, concerning a future state, will appear from the great coincidence of the foregoing natural arguments for a future state, and for the rewards and punishments of it, with what the Scriptures have delivered upon the same heads; also because a similar kind of reasoning in respect of the future states, which succeed in order from infancy

to old age, is found to be just, and to afford many useful directions and predictions. We ought therefore to judge, that the evils of a future state will have the same tendency, and final cause, as those of this life, *viz.* to meliorate and perfect our natures, and to prepare them for ultimate unlimited happiness in the love of God, and of his works.

Secondly, The generation of benevolence, by the natural and necessary tendency of our frames, is a strong argument for the ultimate happiness of all mankind. It is inconsistent to suppose, that God should thus compel us to learn universal unlimited benevolence; and then not provide food for it. And both this and the foregoing argument seem conclusive, though we should not take in the divine benevolence. They are both supported by the analogy and uniformity apparent in the creation, by the mutual adaptations and correspondences of things existing at different times, and in different places: but they receive much additional force from the consideration of the goodness of God, if that be first proved by other evidences; as they are themselves the strongest evidences for it, when taken in a contrary order of reasoning.

And as the benevolence of one part of the creation is thus an argument for the happiness of the other; so, since benevolence is itself happiness, a tendency to learn it in any being is also an argument for his own happiness. And, upon the whole, since God has commanded his beloved sons, the good, to love and compassionate every being that comes within their cognizance, by the voice of their natures speaking within them, we cannot suppose that these his favourites (to speak according to present appearances, and our necessary conceptions, which with this caution is justifiable) will fail of their proper reward in the gratification of this their benevolence.

Thirdly, The infinite goodness of God is an argument for the ultimate happiness of all mankind. This appears without any particular discussion of this attribute. But it may not be amiss for the reader just to review the evidences for it above exhibited, and their tendency to prove the ultimate happiness of all God's creatures.

Fourthly, The infinite happiness and perfection of God is an argument for, and, as it were, a pledge of, the ultimate happiness and perfection of all his creatures. For these attributes, being infinite, must bear down all opposition from the quarters of misery and imperfection. And this argument will be much stronger, if we suppose (with reverence be it spoken!) any intimate union between God and his creatures; and that, as the happiness of the creatures arises from their love and worship of God, so the happiness of God consists, shews itself, &c. (for one does not know how to express this properly) in love and beneficence to the creatures. As God is present every where, knows and perceives every thing, he may also, in a way infinitely

superior to our comprehension, feel every where for all his creatures. Now, according to this, it would seem to us, that all must be brought to ultimate infinite happiness, which is, in his eye, present infinite happiness.

Fifthly, The impartiality of God, in respect of all his creatures, seems to argue, that, if one be made infinitely happy upon the balance, all will be made so. That benevolence, which is infinite, must be impartial also; must look upon all individuals, and all degrees of happiness, with an equal eye; must stand in a relation of indifference to them all. Now this is really so, if we admit the third of the foregoing suppositions concerning the divine benevolence. If all individuals be at last infinitely happy upon the balance, they are so at present in the eye of God, *i. e.* he is perfectly impartial to all his creatures. And thus every intermediate finite degree of misery, how great soever, may be consistent with the impartiality of God. But to suppose, before the creatures *A* and *B* existed, that *A* was made by God to be eternally happy, and *B* made to be eternally miserable, seems as irreconcilable to God's impartiality, as to his benevolence. That both should be made for eternal and infinite happiness, one to enjoy it in one way, the other in another, one by passing through much pain, the other by passing through little or perhaps none, one by an acceleration in one period of his existence, the other in another, &c. &c. is perfectly consistent with God's impartiality; for, the happiness of each being infinite at present in the eye of God, his eye must regard them equally. And even in the eye of finite beings, if *A*'s happiness seem less than *B*'s in one respect, because *A* passes through more pain, it may seem greater in another, because he arrives at greater degrees of it in less time. But this is all appearance. Different finite beings form different judgments according to their different experiences, and ways of reasoning. Who, therefore, shall be made the standard? Not the inferior orders certainly. And if the superior, we shall not be able to rest, till we conclude that all that appears to all finite beings is false and delusive, and that the judgment of the infinite Being is the only true real judgment. Now I have endeavoured to shew, according to the method of ultimate ratios, how, allowing the third supposition concerning the divine goodness, all individuals are equally happy in the eye of God. And thus the impartiality of God is vindicated, according to the truth and reality of things, in the judgment of his own infinite understanding.

Sixthly, All the foregoing reasoning seems to be somewhat more short and clear upon the hypothesis of mechanism; but it is not invalidated by that of free-will. For free-will must be considered as the production of infinite power, and therefore as being suited to the rest of the divine attributes, his benevolence, happiness, and impartiality, and to all the methods by which God conducts men to benevolence and happiness. Or, if the hypo-

thesis of free-will be a bar to the foregoing reasonings in their full extent, it cannot, however, account for misery upon the whole, much less for eternal misery. To suppose that God wills and desires the happiness of all his creatures, and yet that he has given them a power, by which many of them will, in fact, make themselves eternally miserable, also that he foresees this in general, and even in each particular case, is either to suppose God under some fatal necessity of giving such a power; or else to take away his unlimited benevolence in reality, after that it has been allowed in words. If therefore God has given men free-will in such a measure, as that they may bring upon themselves finite misery thereby in the present state, or in any future intermediate one; we must, however, suppose it to be so restrained, as that it shall not occasion infinite and eternal misery. *The cause of the cause is also the cause of the thing caused*; which is surely as evident in the application of it to the present subject, as in any other instance, where it can be applied.

Seventhly, There are many obvious and undeniable arguments, taken from the relative attributes of God, which first exclude the eternal misery of his creatures, and then establish their ultimate happiness by necessary, or, at least, by probable consequence. Thus the whole tenor of nature represents God to us as our Creator, Preserver, Governor, Friend, and Father. All ages and nations have fallen into this language; and it is verified every day by the wonderful beauty, harmony, and beneficence, manifested in the works of the creation, and particularly in the exquisite make of our bodies and minds. Shall then a Creator, who is a friend and father, create for eternal infinite misery? Can any intermediate suppositions, free-will, perverseness, reprobateness, &c. reconcile and unite extremes so utterly discordant? Will he preserve an existence, which ceases to afford happiness, and can now only produce misery without end? Will not the Governor and Judge of all the earth do right? In whatever manner sin be estimated, it must be finite, because it is the work of a finite mind, of finite principles and passions. To suppose therefore a sinner to be absolutely condemned to infinite irreversible misery, on account of the finite sins of this life, seems most highly injurious to the justice of God. And to say, that this infinite irreversible misery is not merely the consequence of the sins of this life, but also of those to be committed in another, is to give a power of repenting, and becoming virtuous, as well as of sinning in another life; whence the sentence might be reversed, contrary to the supposition.

The worst man of those who go to heaven, and the best of those who go to hell, seem to us, if we will reason upon these subjects, as we do upon others, to differ but by an infinitesimal difference, as one may say; and yet the reward of the first being eternal, however small in each finite portion of time, must at last become infinite in magnitude; and the punishment of the last in

like manner. There would therefore be a double infinite difference in the reward and punishment, where the virtue and vice, causing these respectively, have only an infinitely small one. To say that, in such cases, the rewards and punishments of another life may be so conducted by a mixture of happiness and misery in each, as that the balance shall not become ultimately infinite in either, is to take away all hopes and fears relating to a future state; *i. e.* morally and practically to take away the state itself.

Again, Can it be supposed, that an infinitely merciful Father will cast off his son utterly, and doom him to eternal misery, without farther trials than what this life affords? We see numberless instances of persons at present abandoned to vice, who yet, according to all probable appearances, might be reformed by a proper mixture of correction, instruction, hope, and fear. And what man is neither able nor willing to do, may and must, as should seem, be both possible to God, and actually effected by him. He must have future discipline of a severer kind for those whom the chastisements of this life did not bring to themselves. Yet still they will all be fatherly chastisements, intended to amend and perfect, not to be final and vindictive. That the bulk of sinners are not utterly incorrigible, even common observation shews; but the history of association makes it still more evident; and it seems very repugnant to analogy to suppose that any sinners, even the very worst that ever lived, should be so, should be hardened beyond the reach of all suffering, of all selfishness, hope, fear, good-will, gratitude, &c. For we are all alike in kind, and do not differ greatly in degree here. We have each of us passions of all sorts, and lie open to influences of all sorts; so as that the persons *A* and *B*, in whatever different proportions their intellectual affections now exist, may, by a suitable set of impressions, become hereafter alike.

These and many such like reasonings must occur to attentive persons upon this subject, so as to make it highly unsuitable to the benevolence of the Deity, or to the relations which he bears to us, according to the mere light of nature, that infinite irreversible misery, to commence at death, should be the punishment of the sins of this life. And, by pursuing this method of reasoning, we shall be led first to exclude misery upon the balance, and then to hope for the ultimate unlimited happiness of all mankind.

PROP. XCV.—*It is probable from the Scriptures, that all Mankind will be made ultimately happy.*

IN considering the doctrine of the Scriptures upon this head, it will first be requisite to shew, that the texts alleged to prove the absolutely eternal and irreversible misery of the wicked in another life may justly be interpreted in a different sense.

Now the Greek words translated *eternal*, *everlasting*, and *for ever*, in the New Testament, do not by derivation stand for an absolute eternity, neither are they always used in this sense in the New Testament, the Septuagint, or pagan authors. The same may be said of the corresponding Hebrew words. It is true, indeed, that they generally represent a long duration; and this is sometimes limited by the context, or nature of the subject, sometimes not. Now, according to this interpretation, the punishments of the wicked will be of great duration, suppose of one or more long ages or dispensations. But one might rather conclude from the words of the original, if their derivation be considered, that they will end at the expiration of some such long period, than that they will be absolutely eternal.

If it be said, that the eternity of God is expressed by the same words; I answer, that here the nature of the subject gives a sense to the words, whereof they are otherwise incapable. It may be urged in like manner, that the duration of future rewards is expressed by the same words; but then the absolute eternity of this duration is not perhaps deducible at all from these or any other words. We must in this entirely refer ourselves to the bounty and benevolence of our Creator, and depend upon him for all our expectations. Besides, the nature of the subject differs widely here. To suppose the misery of the wicked to be, in every respect, equal and parallel to the happiness of the good, is quite contrary to the general tenor of the Scriptures; and looks like setting up the Manichean doctrine of two opposite infinite principles, a doctrine every where condemned in effect, though not in express words, both by the Old and New Testament. We may add, that the happiness of the good is also denoted in Scripture by incorruption, indissolubility, &c. as well as by the words applied to the punishments of the wicked.

The words of our Saviour, *Where their worm dieth not, and their fire is not quenched*, are thought by some to be a strong argument for the absolute eternity of future punishment. But as these words are taken from Isaiah, and allude to the punishment of the malefactors, whose carcases were suffered to rot upon the ground, or burnt in the valley of Hinnom, they appear to be too popular and figurative to justify such an interpretation. And yet they seem plainly intended to declare the very long duration of future punishment; and that, as the worms, which feed upon a putrified body, or the fire, which burns it, in this world, do themselves come to a certain and known period, the misery of another world, and the fire of hell, will have no definite one, but continue till they have consumed the sin and guilt which feed them. In this way of interpretation, the passage under consideration would agree with that concerning the *payment of the last farthing*.

Our Saviour's expression concerning Judas, *viz. That it had*

been good for him that he had not been born, cannot indeed be alleged for the proof of the eternity of future punishment; but it seems to oppose the supposition of the ultimate happiness of all. However, this expression may be popular and proverbial; or it may perhaps denote, that his last agonies, or his sufferings in another world should outweigh all his preceding happiness, or some way admit of an interpretation consistent with the proposition under consideration. For it does not appear to be sufficiently clear and precise for an absolute disproof of it. We may add, that as every man, who at his death falls short of the terms of salvation, whatever these be, *crucifies the Son of God afresh*, according to the language of St. Paul; so he will have reason, according to his then necessary conceptions, to wish with Judas that he had never been born. *O that they were wise, that they understood this, that they would consider their latter end!*

Now, as the words of the New Testament do not necessarily infer the absolute eternity of punishment; so the general tenor of reasoning there used, with numberless passages both of the Old and New Testaments, concerning the mercy of God, his readiness to forgive, &c. favour the contrary opinion. And this is a farther reason for interpreting these texts of an indefinitely long duration only; and that especially if the small number of them, and the infinite importance of the doctrine, which they are supposed to contain, be also taken into consideration.

To the same purpose we may observe, that there is nothing in all St. Paul's Epistles, from whence the absolute eternity of future punishment can be at all inferred, except the words *everlasting destruction from the presence of our Lord*, 2 Thess. i. 9; though the Epistles to the Romans and Hebrews are both of them general summaries of the Christian religion, and though he speaks in both of future punishment. In the Epistle to the Romans, he says, *tribulation and anguish* (not eternal tribulation) shall be upon every soul of man that doeth evil; also that the wages of sin is death, not eternal death, or eternal punishment; whereas the gift of God is eternal life. In the Epistle to the Hebrews, he asks, of how much sorer punishment than temporal death an apostate is to be thought worthy? Which seems not likely for him to do, had he believed it eternal. In like manner, there is nothing of this kind in St. Luke's Gospel, or his Acts of the Apostles, in St. John's Gospel, or his Epistles, or in the Epistle of St. James, St. Peter, or St. Jude. And yet good men now, who believe the eternity of punishment, scarce ever fail to insist upon it most earnestly in their discourses and exhortations. For, if it be a doctrine of the Christian religion, it is so essential a one, as that it could not have been omitted by any inspired writer, nor fail to have been declared in the most express terms, which certainly cannot be said of any of the texts alleged to prove the eternity of punishment. The words translated *eternal*, and *for ever*, must have been ambiguous to the Jews,

i. e. to the first Christians; and the figurative expression, *their worm dieth not*, &c. is far less determinate than many phrases, which our Saviour might have chosen, had it been his intention to denounce absolutely eternal misery.

To this we may add, that it does not appear from the writings of the most ancient fathers, that they put such a construction upon the words of the New Testament; and the omission of this doctrine in the ancient creeds shews, that it was no original doctrine, or not thought essential; which yet could not be, if it was believed; or that many eminent persons for some centuries were of a contrary opinion. And indeed the doctrine of purgatory, as now taught by the papists, seems to be a corruption of a genuine doctrine held by the ancient fathers concerning a purifying fire.

It may perhaps be, that the absolute eternity of punishment was not received till after the introduction of metaphysical subtleties relating to time, eternity, &c. and the ways of expressing these; *i. e.* not till after the pagan philosophy, and vain deceit, had mixed itself with, and corrupted Christianity.

Still farther, It does by no means appear to be consonant to the nature of the Christian religion to interpret the New Testament in a strict literal manner, or adhere to phrases in opposition to the general tenor of it. Our Saviour in many places appeals to the natural equitable judgments of his auditors. The evangelists and apostles all enter into the reasons of things; the gospels are short memoirs; the epistles were written to friends, and new converts; and the nature of such writings must be very different from that of a precise determinate law, such as that of Moses, or the civil law of any country. And indeed herein lies one material difference between the rigid Jewish dispensation, and the Christian, which last is called by St. James the *perfect law of liberty*. From all which it follows, that we are rather to follow the general tenor, than to adhere to particular expressions. And this will appear still more reasonable, when it is considered, that we are yet but novices in the language of the Old and New Testaments, the relations which they bear to each other, and their declarations concerning future events.

Another argument against interpreting the passages above referred to, in the sense of absolutely eternal misery, is, that there are many other passages, whose strict and literal sense is contrary thereto. And in such a case it seems, that the infinite goodness of God, so many ways declared in the Scriptures, must soon turn the scale. For the Scriptures must be made consistent with themselves; and the veracity and goodness of God seem much rather to oblige him to perform a promise, than to execute a threatening. I will mention a few passages, some of which it may be observed even establish the contrary doctrine of the ultimate happiness of all mankind.

Thus the most natural, as well as the most strict and literal sense of the words, *as in Adam all die, so in Christ shall all be*

made alive, is the ultimate happiness of all the children of Adam, of all mankind. God's *mercy* is declared to *endure for ever*; and he is said *not to keep his anger for ever*: which expressions, in their first and most obvious sense, are quite inconsistent with the absolute eternity of punishment. Our Saviour says, that the person who is not reconciled to his brother, *shall not be discharged till he has paid the last farthing*; which intimates, that there is a time when he will be discharged. In like manner the debtor, who owed his lord ten thousand talents, is delivered over to the tormentors, till he pay these. To say that he can never pay them, because as we have all our faculties from God, so we can merit nothing from God, is to embrace the mechanical hypothesis, which, in the judgment of all, must be utterly inconsistent with the eternity of punishment. For, if a man cannot have merit, he cannot have demerit. To suppose a creature any way brought into being upon such terms as to be only capable of demerit, seems most highly injurious to the attributes of God, by whatever means this be effected, the fall of our first parents, or any other.

Again, *God in judgment remembers mercy*. This is said in general; and therefore it ought not to be confined to the judgments of this world. And to do so, when all the pleasures and pains of this world are every where in the New Testament declared unworthy of our regard in comparison of those of another, is highly unsuitable to the goodness of God. But indeed this cannot be done without departing from the most obvious literal sense. The same may be said of the passages, *God is not extreme to mark what is done amiss; that he is loving to every man; that his mercy, his tender mercy, is over all his works, &c.* Can it be said with any appearance of truth, that God will give an infinite overbalance of misery to those beings whom he loves?

It may very well be supposed, that though the punishments of a future state be finite; yet this should not be declared in so many words in the Scriptures. For such a procedure would be analogous to the gradual opening of all God's dispensations of mercy. Mankind in their infant state were not able to receive such kind of nourishment; neither are all perhaps yet able. But, if future punishments be absolutely eternal, it is hard to conceive why this should not have been declared in the most express terms, and in many places of Scripture; also how there should be so many passages there, which are apparently inconsistent therewith.

There remains one argument more, and of great weight in my opinion, against interpreting any passages of Scripture so as to denounce absolutely eternal misery. This is, the declarations of the Scriptures concerning the smallness of the number of the elect, and the great difficulty of entering in at the strait gate, already taken notice of. To suppose future punishments to be absolutely eternal, is to suppose that the Christian dispensation

condemns far the greater part of mankind to infinite misery upon the balance, whilst yet it is every where declared to be a dispensation of mercy, to be *glory to God*, and *good-will to men*; which is a great apparent inconsistency. And indeed, unless the doctrine of absolutely eternal punishment be taken away, it seems impracticable to convince the world of the great purity and perfection required by the gospel in order to our entrance into the kingdom of heaven. If there be no punishment in another state, besides what is absolutely eternal, men of very low degrees of virtue will hope to escape this, and consequently to escape with impunity: whereas, if there be a purging fire, into which all the wicked are to be cast, to remain and suffer there according to their demerits, far beyond what men generally suffer in this life; and if there be only few that are admitted to happiness after the expiration of this life, without such farther purification; what vigour and earnestness should we use to escape so great a punishment, and to be of the happy number of those whose names are written in the book of life!

This may suffice to shew, that the absolute eternity of future punishment cannot be concluded from the Scriptures. We are next to inquire what evidences they afford for the ultimate happiness of all mankind. I have already mentioned some passages which favour this doctrine; but I intend now to propose two arguments of a more general nature.

First, then, It may be observed, That the Scriptures give a sanction to most of the foregoing arguments, taken from the light of nature, for this doctrine, by reasoning in the same manner. Thus the punishments of the Jews and others are represented as chastisements, *i. e.* as evils tending to produce a good greater than themselves. Our benevolence to our children is represented by Christ as an argument of the infinitely greater benevolence of God our Heavenly Father. God promises to make Abraham happy by making his posterity happy, and them happy by making them the instruments of happiness to all the nations of the earth (which they are still to be probably in a much more ample manner than they have ever yet been.) Now this shews, that the happiness, intended for us all, is the gratification of our benevolence. The goodness of God is every where represented as prevailing over his severity; he remembers good actions to thousands of generations, and punishes evil ones only to the third and fourth. Not a sparrow is forgotten before him; he giveth to all their meat in due season; pities us as a father does his children; and sets our sins as far from us, as heaven is from earth, &c. All which kind of language surely implies both infinite mercy in the forgiveness of sin, and infinite love in advancing his purified children. We are all the offspring of God, and, by consequence, agreeably to other phrases, are *heirs of all things, heirs of God, and co-heirs with Christ, members of the mystical body of Christ, and of each other, i. e.* we are all par-

takers of the happiness of God, through his bounty and mercy. God is the God of the Gentiles, as well as of the Jews; and has *concluded* them *all in unbelief*, only that he might have mercy upon all. And, in general, all the arguments for the ultimate happiness of all mankind, taken from the relations we bear to God, as our Creator, Preserver, Governor, Father, Friend, and God, are abundantly attested by the Scriptures.

Secondly, There are in the Scriptures some arguments for the ultimate restoration and happiness of all mankind, which now seem sufficiently full and strong, and which yet could not be understood in former ages; at least we see, that, in fact, they were not. Of this kind is the history of the Jewish state, with the prophecies relating thereto. For we may observe, that, according to the Scriptures, the body politic of the Jews must be made flourishing and happy, whether they will or no, by the severities which God inflicts upon them. Now the Jewish state, as has been already remarked, appears to be a type of each individual in particular, on one hand; and of mankind in general, on the other.

Thus, also, it is foretold that Christ will *subdue all things to himself*. But subjection to Christ, according to the figurative prophetic style of the Scriptures, is happiness, not merely subjection by compulsion, like that to an earthly conqueror. Agreeably to this, all things are to be *gathered together in one in Christ*, both those which are *in heaven*, and those *on earth*: and St. John saw *every creature in heaven, in earth, under the earth, and in the sea, and all that were in them, praising God*.

The prayer of faith can remove mountains; all things are possible to it; and, if we could suppose all men defective in this article, in praying with faith for the ultimate happiness of mankind, surely our Saviour must do this; his prayer for his crucifiers cannot surely fail to obtain pardon and happiness for them.

We are commanded to love God with our whole powers, to be joyful in him, to praise him evermore, not only for his goodness to us, but also for that to all the children of men. But such love and joy, to be unbounded, pre-suppose unbounded goodness in God, to be manifested to all mankind in due time; else there would be some men, on whose accounts we could not rejoice in God. At the same time, the delay of this manifestation of God's goodness, with the severity exercised towards particulars, in their progress to happiness, beget submission, resignation, *fear and trembling*, in us, till at last we come to that *perfect love that casts out fear*.

It may perhaps be, that the writers of the Old and New Testaments did not see the full meaning of the glorious declarations, which the Holy Spirit has delivered to us by their means; just as Daniel, and the other prophets, were ignorant of the full and precise import of their prophecies relating to Christ. Or perhaps they did; but thought it expedient, or were commanded, not to

be more explicit. The Christian religion, in converting the various pagan nations of the world, was to be corrupted by them; and the superstitious fear of God, which is one of these corruptions, may have been necessary hitherto on account of the rest. But now the corruptions of the true religion begin to be discovered, and removed, by the earnest endeavours of good men of all nations and sects, in these latter times, by their *comparing spiritual things with spiritual*.

How far the brute creation is concerned in the redemption by Christ, may be doubted; and it does not seem to be much or immediately our business to inquire, as no relative duty depends thereon. However, their fall with Adam, the covenant made with them after the deluge, their serving as sacrifices for the sins of men, and as types and emblems in the prophecies, their being commanded to praise God (for every thing that hath breath is thus commanded, as well as the Gentiles,) seem to intimate that there is mercy in store for them also, more than we may expect, to be revealed in due time. The Jews considered the Gentiles as dogs in comparison of themselves. And the brute creatures appear by the foregoing history of association to differ from us in degree, rather than in kind.

It may be objected here, that, if this opinion of the ultimate happiness of all mankind be true, it is not, however, proper to publish it. Men are very wicked, notwithstanding the fear of eternal punishment; and therefore will probably be more so, if that fear be removed, and a hope given to the most wicked of attaining everlasting happiness ultimately. I answer, first, That this opinion is already published so far, that very few irreligious persons can be supposed to believe the contrary much longer: or, if they do believe absolutely eternal punishment to be the doctrine of the Scriptures, they will be much induced thereby to reject revealed religion itself. It seems therefore to be now a proper time to inquire candidly and impartially into the truth. The world abounds so much with writers, that the mere opinion of a single one cannot be supposed to have any great weight. The arguments produced will themselves be examined, and a person can now do little more than bring things to view for the judgment of others. The number of teachers in all arts and sciences is so great, that no one amongst them can or ought to have followers, unless as far as he follows truth.

But, secondly, It does not seem that even the motives of fear are lessened to considerate persons, by supposing the fire of hell to be only a purifying one. For it is clear from the Scriptures, that the punishment will be very dreadful and durable. We can set no bounds either to the degree or duration of it. They are therefore practically infinite.

Thirdly, The motives of love are infinitely enhanced by supposing the ultimate unlimited happiness of all. This takes off the charge of enthusiasm from that noble expression of some mystical

writers, in which they resign themselves entirely to God, both for time and eternity. This makes us embrace even the most wicked with the most cordial, tender, humble affection. We pity them at present, as *vessels of wrath*; yet live in certain hopes of rejoicing with them at last; labour to bring this to pass, and to hasten it; and consider, that every thing is good, and pure, and perfect, in the sight of God.

CONCLUSION.

I HAVE now gone through with my Observations on the Frame, Duty, and Expectations of Man, finishing them with the doctrine of ultimate unlimited happiness to all. This doctrine, if it be true, ought at once to dispel all gloominess, anxiety, and sorrow, from our hearts; and raise them to the highest pitch of love, adoration, and gratitude towards God, our most bountiful Creator, and merciful Father, and the inexhaustible source of all happiness and perfection. Here self-interest, benevolence, and piety, all concur to move and exalt our affections. How happy in himself, how benevolent to others, and how thankful to God, ought that man to be, who believes both himself and others born to an infinite expectation! Since God has bid us rejoice, what can make us sorrowful? Since he has created us for happiness, what misery can we fear? If we be really intended for ultimate unlimited happiness, it is no matter to a truly resigned person, when, or where, or how. Nay, could any of us fully conceive, and be duly influenced by, this glorious expectation, this infinite balance in our favour, it would be sufficient to deprive all present evils of their sting and bitterness. It would be a sufficient answer to the *πρόθεν τὸ κακόν*, to all our difficulties and anxieties from the folly, vice, and misery which we experience in ourselves, and see in others, to say, that they will all end in unbounded knowledge, virtue, and happiness; and that the progress of every individual in his passage through an eternal life is from imperfect to perfect, particular to general, less to greater, finite to infinite, and from the creature to the Creator.

But alas! this is chiefly speculation, and must be to the bulk of mankind. Whilst we continue entangled in the fetters of sin, we cannot enjoy the glorious liberty and privileges of the children of God. We cannot exalt ourselves to heaven, and make a right estimate of things, from the true point of view, till we get clear

of the attraction, and magic influences, of the earth. Whence it follows, that this doctrine, however great and glorious in itself, in the eye of a being sufficiently advanced in purity and comprehension, must be to us like the book given to St. John, *bitter in the belly, though sweet in the mouth*. The first general view cannot but charm us, however grovelling and corrupt our minds may be. But when we begin to digest it, when, after mature deliberation, we come to see its several evidences, connexions, and consequences, our self-interest, our benevolence, and our piety, in proportion to their strength and purity, will all rise up, and join their forces, and alarm us to the utmost extent of our faculties. When we consider the purity required of those, who are so happy as to escape the second death, and the purifying lake of fire, whose smoke ascendeth up for ever and ever, *i. e.* for ages of ages, we cannot but be in pain for ourselves, and work out our own salvation with fear and trembling. When we view the sin and wickedness with which the world every where abounds, our hearts cannot but melt with compassion for others, for the tortures that are prepared for them, after the expiration of this life, in order to fit them for pure and spiritual happiness, to burn out the stains of sensuality and self-love, and exalt them to the unbounded love of God, and his works. When we consider farther, that God has mercy on whom he will, and hardens whom he will, and that we, with all our pleasures and pains, are absolute nothings in comparison of him, we must, like St. John, again fall down at his feet dead with astonishment. And yet we need not fear; from the instant that we thus humble ourselves, he will lay his hand upon us and exalt us; he has the keys of death and hell, in every possible sense of those words.

There is also another consideration, which, though of less moment than the foregoing, is yet abundantly sufficient to move the compassion of the good, and alarm the fears of the wicked; I mean the temporal evils and woes, which will probably fall upon the nominally christian states of these western parts, the christian Babylon, before the great revolution predicted in the Scriptures, before the kingdoms of this world become the kingdoms of our Lord, and of his Christ. These evils will be brought upon us by our excess of wickedness, just as the deluge was upon the old world, and the destruction of Sodom upon its lewd inhabitants, through theirs; they may also be somewhat delayed, or alleviated, by reformations public or private, even partial and temporary ones. I will therefore make a few short remarks concerning such things, as seem more particularly to call for the attention of the present christian world; at least of those good Philadelphians, who are desirous to keep themselves and others from that hour of temptation, which is coming upon us all. My remarks must be supposed to relate chiefly to this kingdom; to be suggested by what occurs in it; and to be calculated, as far as

my poor, but sincere and earnest endeavours can have any weight, to stem for a while that torrent of vice and impiety, which seem ready to swallow us up, and, if possible, to protract the life of the body politic. But I presume, that the resemblance between all the states of Christendom is so great in all the points here considered, that the practical consequences are the same upon the whole.

There are six things, which seem more especially to threaten ruin and dissolution to the present states of Christendom.

First, The great growth of atheism and infidelity, particularly amongst the governing part of these states.

Secondly, The open and abandoned lewdness, to which great numbers of both sexes, especially in the high ranks of life, have given themselves up.

Thirdly, The sordid and avowed self-interest, which is almost the sole motive of action in those who are concerned in the administration of public affairs.

Fourthly, The licentiousness and contempt of every kind of authority, divine and human, which is so notorious in inferiors of all ranks.

Fifthly, The great worldly-mindedness of the clergy, and their gross neglects in the discharge of their proper functions.

Sixthly, The carelessness and infatuation of parents and magistrates with respect to the education of youth, and the consequent early corruption of the rising generation.

All these things have evident mutual connexions and influences; and, as they all seem likely to increase from time to time, so it can scarce be doubted by a considerate man, whether he be a religious one or no, but that they will, sooner or later, bring on a total dissolution of all the forms of government, that subsist at present in the christian countries of Europe. I will note down some of the principal facts of each kind, and shew their utter inconsistency with the welfare of a body politic, and their necessary tendency to anarchy and confusion.

I begin with the atheism and infidelity which prevail so much among the governing part of these western kingdoms. That infidelity prevails, especially in these kingdoms, will readily be acknowledged by all. But the same persons, who treat the Christian religion, and its advocates, with so much scorn, will probably, some of them at least, profess a regard to natural religion; and it may seem hard to question their sincerity. However, as far as has occurred to my observation, these persons either deceive themselves, or attempt to deceive others, in this. There appears in them no love or fear of God, no confidence in him, no delight in meditating upon him, in praying to him, or praising him, no hope or joy in a future state. Their hearts and treasures are upon this earth, upon sensual pleasures, or vain amusements, perhaps of philosophy or philology, pursued to pass the time, upon honour or riches. And indeed there are the

same objections, in general, to natural religion as to revealed, and no stronger evidences for it. On the contrary, the historical and moral evidences for the general truth of the Scriptures, which these persons deny, are more convincing and satisfactory to philosophical as well as to vulgar capacities, than the arguments that are usually brought to prove the existence and attributes of God, his Providence, or a future state: not but that these last are abundantly sufficient to satisfy an earnest and impartial inquirer.

If now there really be a God, who is our natural and moral governor, and who expects that we should regard him as such, those magistrates who care not to have him in their thoughts, to suffer him to interfere in their scheme of government, who *say in their hearts that there is no God*, or wish it, or even bid open defiance to him (though I hope and believe this last is not often the case), cannot prosper: but must bring down vengeance upon themselves, and the wicked nations over whom they preside. In like manner, if God has sent his beloved Son Jesus Christ to be an example to the world, to die for it, and to govern it, it cannot be an indifferent thing whether we attend to his call or no. The neglect of revealed religion, especially in persons of authority, is the same thing as declaring it to be false; for if true, the neglect of it is, as one may say, high treason against the majesty of heaven. He that honours not the Son, cannot honour the Father, who has sent him with sufficient credentials. And accordingly, if we consider the second psalm as a prophecy relating to Christ, which it certainly is, those kings and magistrates who rise up against God and his Christ, intending to shake off the restraints of natural and revealed religion, must expect to be broken in pieces like a potter's vessel. Since they will not *kiss the Son*, and *rejoice before him with reverence*, they must expect that he will *rule over them with a rod of iron*.

Now, we may go farther, and affirm, that if there were no satisfactory evidence for natural or revealed religion, still it is the interest of princes and governors to improve that which there is to the best advantage. The happiness of their people, their own interest with them, their power, their safety, their all, depend upon it. Neither is this any intricate, far-fetched, or doubtful position, but a truth which lies upon the surface of things, which is evident at first sight, and undeniable after the most thorough examination. So that for governors to render religion contemptible in the eyes of their subjects, by example or insinuation, and much more by directly ridiculing or vilifying it, is manifest infatuation; it is seeing without perceiving, and hearing without understanding, through the grossness and carnality of their hearts. And it may be part of the infatuation predicted to come upon the wicked in the latter ages of the world. For then *the wicked shall do wickedly, and none of the wicked shall understand*.

Religion is often said by unbelievers to have been the invention

of wise lawgivers, and artful politicians, in order to keep the vicious and headstrong multitude in awe. How little does the practice of the present times suit with this! The administrators of public affairs in the present times are not even wise or artful enough to take advantage of a pure religion, handed down to them from their ancestors, and which they certainly did not invent; but endeavour to explode it at the manifest hazard of all that is dear to them. For mankind can never be kept in subjection to government, but by the hopes and fears of another world; nay, the express precepts, promises, and threatenings of the gospel are requisite for this purpose. The unwritten law of nature is too pliable, too subtle, and too feeble; a dishonest heart can easily explain it, or its motives, away; and violent passions will not suffer it to be heard; whereas the precepts of revealed religion are absolute and express, and its motives alarming to the highest degree, where the Scriptures are received and considered, in any measure, as they ought to be.

The Greek and Roman philosophy and morality was not indeed equal to ours; but we may have a sufficient specimen from thence, how little very good doctrines, when taught without authority, are able to check the growing corruption of mankind. Had not Christianity intervened at the declension of the Roman empire, and put a stop to the career of vice, the whole body politic of the civilized nations of that empire must have been dissolved, from the mere wickedness and corruption of its several parts. And much rather may the same come upon us, if after such light and evidence we cast off the restraints and motives of revealed religion.

I would not be understood to speak here to those alone, who are legally the governors of the nations of Christendom, *i. e.* who have a particular legislative or executive power vested in them by the constitutions or customs of their respective countries; but also to all such as by their eminence in any way, their learning, their titles, their riches, &c. draw the world after them. And it seems requisite to remind the two learned professions of law and physic, that though they are no ways qualified to judge of the evidence for religion, unless they have examined it carefully, *i. e.* with the same attention and impartiality, as they would do a matter of law or physic, where it is their interest to form a right judgment (in which case there seems to be no doubt but they will determine for it); yet the illiterate part of mankind will easily catch the infection from them on account of their general, confused reputation of being learned, and by means of the plausible ways of haranguing and descanting upon topics, to which they are formed by their educations and professions. And thus, whether they attend to it or no, they become the seducers of mankind, and rocks of offence to the weak and ignorant, and load themselves with the guilt of other men's sins. This caution is so much the more necessary, as it is common for young

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students in these professions to list themselves on the side of irreligion, and become nominal infidels of course, and from fashion, as it were; and without pretending, as indeed there could be no reasonable pretence, to have examined into the merits of the cause. Which blind and implicit faith in the blind, in one does not know what or whom, would be most unaccountable in those who profess infidelity, were it not, that this is in every other instance a contradiction to itself, and must be so, on account of the wilful infatuation from which it arises.

I will now shew briefly how the prevalence of infidelity increases, and is increased by, the other evils here mentioned. That it opens a door to lewdness cannot be doubted by any one; and, indeed, the strictness and purity of the christian religion, in this respect, is probably the chief thing which makes vicious men first fear and hate, and then vilify and oppose it. The unwritten law of nature cannot fix precise bounds to the commerce between the sexes. This is too wide a field, as I have observed above; and yet it highly approves of chastity of thought, word, and deed. If, therefore, men reject only revealed religion, great libertinism must ensue; but if they reject natural also, which is generally the case, we can expect nothing but the most abandoned dissoluteness.

As to self-interest, we may observe, that those who have no hopes in futurity, no piety towards God, and, consequently, no solid or extensive benevolence towards men, cannot but be engrossed by the most sordid and grovelling kind, that which rests in present possessions and enjoyments. And, conversely, when such a self-interest has taken root, they must be averse to religion, because it opens distant and ungrateful views to them, and inculcates the pure and disinterested love of God and their neighbour; to them an enthusiastic and impossible project.

In like manner infidelity must dispose men to shake off the yoke of authority, to unbounded licentiousness; and reciprocally is itself the natural consequence of every degree of licentiousness. Those who do not regard the Supreme Authority, can be little expected to regard any of his vicegerents; those who do not fear God, will not honour the king. If the infatuation of princes was not of the deepest kind, they could not but see that they hold their dominions entirely by the real Christianity that is left amongst us; and that if they do succeed in taking away this foundation, or weakening it much farther, their governments must fall, like houses built upon sand. Besides the great influence which Christianity has to make men humble and obedient, it is to be considered, that our ancestors have so interwoven it with the constitutions of the kingdoms of Europe, that they must stand or fall together. Christianity is the cement of the buildings.

It is also evident, that the infidelity of the laity must have an ill effect in respect of the clergy. Many of these must be the

sons of infidels, thrust into the church by their parents for subsistence, or with a view to great honours and profits; and must carry with them a deep tincture of the corruption and infidelity which they imbibed in their infancy and youth. And it is not less evident, that the worldly-mindedness and neglect of duty in the clergy is a great scandal to religion, and cause of infidelity; the chief probably after the impatience of restraint in respect of chastity in the laity. It is also to be considered, that unbelieving magistrates will have little regard to the piety of the persons whom they promote to the highest stations of the church, but rather to their flattery, subserviency, and apparent political usefulness.

Lastly, As to the perverted education of youth, atheism and infidelity are both the cause and effect of this in so obvious a manner, that it seems superfluous to enlarge upon it.

The lewdness which I have mentioned above, as a second cause of the future dissolution of these western kingdoms, is now risen to such a height, as almost to threaten utter confusion. Men glory in their shame, and publicly avow what in former ages was industriously concealed. Princes are justly chargeable with a great part of this public guilt. Their courts will imitate them, in what is bad at least; and be led on thereby from one degree of shamelessness to another. The evil increases gradually; for neither courts, nor private persons, become quite profligate at once; and this may make some almost persuade themselves, that the present times are not worse than the preceding. The sins of this kind are, for the most part, joined with idolatry in the prophetic writings, and made the types thereof. So that the open and avowed practice of them is an open renunciation of our allegiance to God and Christ; and, agreeably to this, is, as has been observed above, the principal cause why so many persons reject revealed religion. But, if we renounce our allegiance and covenant, we can be no longer under the protection of God.

The gross self-interest, which is now the principal motive in most marriages in high life, is both a cause and consequence of this libertinism. The same may be observed of the great contempt in which marriage is held, and which almost threatens promiscuous concubinage among the higher ranks, and the professed unbelievers.

As to the clergy, if they neglect to admonish princes and great men through fear, and servile interest, a great part of the national guilt will lie at their doors; and, if they become, in general, infected with this vice (which indeed is not the case now; but may perhaps hereafter, as all things grow worse), it will soon be the entire subversion of the external form of church government; however certain it be, that the church of those who *worship God in spirit and in truth*, will prevail against the gates of hell.

The third great evil likely to hasten our ruin is the self-interest which prevails so much amongst those to whom the administration

of public affairs is committed. It seems that bodies politic are in this particular, as in many others, analogous to individuals, that they grow more selfish, as they decline. As things now are, one can scarce expect, that, in any impending danger, those who have it in their power to save a falling state, will attempt it, unless there be some prospect of gain to themselves. And, while they barter and cast about for the greatest advantages to themselves, the evil will become past remedy. Whether or no it be possible to administer public affairs upon upright and generous principles, after so much corruption has already taken place, may perhaps be justly questioned. However, if it cannot be now, much less can it be hereafter; and, if this evil increase much more in this country, there is reason to fear, than an independent populace may get the upper hand, and overset the state. The wheels of government are already clogged so much, that it is difficult to transact the common necessary affairs, and almost impossible to make a good law.

The licentiousness of inferiors of all ranks, which is the fourth great evil, runs higher in this country perhaps than in any other. However, the infection will probably spread. The inferiors in other countries cannot but envy and imitate those in this; and that more and more every day, as all mutual intercourses are enlarged. The self-interest just spoken of contributes greatly to this evil, the insolence of the populace against one party of their superiors being supported, and even encouraged, by the other, from interested views of displacing their opposites. Let, it be observed also, that the laity of high rank, by ridiculing and insulting their superiors in the church, have had a great share in introducing the spirit of universal disobedience, and contempt of authority, amongst the inferior orders, in this nation.

The wicked and notoriously false calumnies which are spread about concerning the royal family by the disaffected party in this country, may be ranked under this evil. Those who scruple to take the oaths required by the present government, ought at least to seek the peace of the country, where they live in peace, and the quiet enjoyment of their possessions. However, the crime of such as take the oaths, and still vilify, is much greater, and one of the highest offences that can be offered to the Divine Majesty.

That worldly-mindedness, and neglect of duty, in the clergy, must hasten our ruin, cannot be doubted. These are *the salt of the earth*, and *the light of the world*. If they lose their savour, the whole nation, where this happens, will be converted into one putrid mass; if their light become darkness, the whole body politic must be dark also. The degeneracy of the court of Rome, and secular bishops abroad, are too notorious to be mentioned. They almost cease to give offence, as they scarce pretend to any function or authority, besides what is temporal. Yet still there is great mockery of God in their external pomp, and profanation

of sacred titles; which, sooner or later, will bring down vengeance upon them. And as the court of Rome has been at the head of the great apostacy and corruption of the christian church, and seems evidently marked out in various places of the Scriptures, the severest judgments are probably reserved for her.

But I rather choose to speak to what falls under the observation of all serious, attentive persons in this kingdom. The superior clergy are, in general, ambitious, and eager in the pursuit of riches; flatterers of the great, and subservient to party interest; negligent of their own immediate charges, and also of the inferior clergy, and their immediate charges. The inferior clergy imitate their superiors, and, in general, take little more care of their parishes, than barely what is necessary to avoid the censure of the law. And the clergy of all ranks are, in general, either ignorant; or, if they do apply, it is rather to profane learning, to philosophical or political matters, than to the study of the Scriptures, of the oriental languages, of the fathers, and ecclesiastical authors, and of the writings of devout men in different ages of the church. I say this is, in general, the case; *i. e.* far the greater part of the clergy of all ranks in this kingdom are of this kind. But there are some of a quite different character, men eminent for piety, sacred learning, and the faithful discharge of their duty, and who, it is not to be doubted, mourn in secret for the crying sins of this and other nations. The clergy, in general, are also far more free from open and gross vices, than any other denomination of men amongst us, physicians, lawyers, merchants, soldiers, &c. However, this may be otherwise hereafter. For it is said, that in some foreign countries the superior clergy, in others the inferior, are as corrupt and abandoned, or more so, than any other order of men. The clergy in this kingdom seem to be what one might expect from the mixture of good and bad influences that affect them. But then, if we make this candid allowance for them, we must also make it for persons in the high ranks of life, for their infidelity, lewdness, and sordid self-interest. And though it becomes an humble, charitable, and impartial man, to make all these allowances; yet he cannot but see, that the judgments of God are ready to fall upon us all for these things; and that they may fall first, and with the greatest weight, upon those, who, having the highest office committed to them in the spiritual kingdom of Christ, neglect it, and are become mere *merchants of the earth, and shepherds, that feed themselves, and not their flocks.*

How greatly might the face of things be changed in this kingdom, were any number of the superior, or even of the inferior clergy, to begin to discharge their respective functions with true christian zeal, courage, and fidelity! The earnestness of some might awaken and excite others, and the whole lump be leavened.

At least, we might hope to delay or alleviate the miseries that threaten us. Why are not all the poor taught to read the Bible, all instructed in the church catechism, so as to have such principles of religion early instilled into them, as would enable them to take delight in, and to profit by, the Bible, and practical books of religion? Why are not all the sick visited, the feeble-minded comforted, the unruly warned? And why do not ministers go about, thus doing good, and seeking out those who want their assistance? Why not punish and discourage all negligent parish ministers, reward and promote those that are pious and diligent? Let those worthy clergymen, who lament the degeneracy of their own order, inform the public what is practicable and fitting to be done in these things. I can only deliver general remarks, such as occur to a by-stander.

There are great complaints made of the irregularities of the Methodists, and, I believe, not without reason. The surest means to check these irregularities are for the clergy to learn from the methodists what is good in them, to adopt their zeal, and concern for lost souls: this would soon unite all that are truly good amongst the methodists to the clergy, and disarm such as are otherwise. And if the methodists will hearken to one who means sincerely well to all parties, let me entreat them to reverence their superiors, to avoid spiritual selfishness, and zeal for particular phrases and tenets, and not to sow divisions in parishes and families, but to be peace-makers, as they hope to be called the children of God. The whole world will never be converted, but by those who are of a truly catholic spirit. Let me entreat all parties, as a sincere friend and lover of all, not to be offended with the great, perhaps unjustifiable freedom, which I have used, but to lay to heart the charges here brought, to examine how far they are true, and reform wherever they are found to be so.

If the state of things in this and other nations be, in any measure, what I have above described, it is no wonder that the education of youth should be grossly perverted and corrupted, so that one may justly fear, that every subsequent generation will exceed that which went before it in degeneracy and wickedness, till such time as the great tribulation come. Vicious parents cannot be sensible of the importance and necessity of a good and religious education, in order to make their children happy. They must corrupt them not only by their examples, but by many other ways, direct as well as indirect. As infidelity now spreads amongst the female sex, who have the care of both sexes during their infancy, it is to be feared, that many children will want the very elements of religion; be quite strangers to the Scriptures, except as they sometimes hear them ridiculed; and be savages as to the internal man, as to their moral and religious knowledge and behaviour; and be distinguished from them chiefly by the feeble restraints of external politeness and decorum. It is

evident from common observation, and more so from the foregoing theory, that children may be formed and moulded as we please. When therefore they prove vicious and miserable, the guilt lies at our doors, as well as theirs; and, on the contrary, he who educates a son, or a daughter, in the ways of piety and virtue, confers the highest obligation both upon his child, and upon the rising generation; and may be the instrument of salvation, temporal and eternal, to multitudes.

There are two things here which deserve more particular attention; *viz.* the education of the clergy, and that of princes.

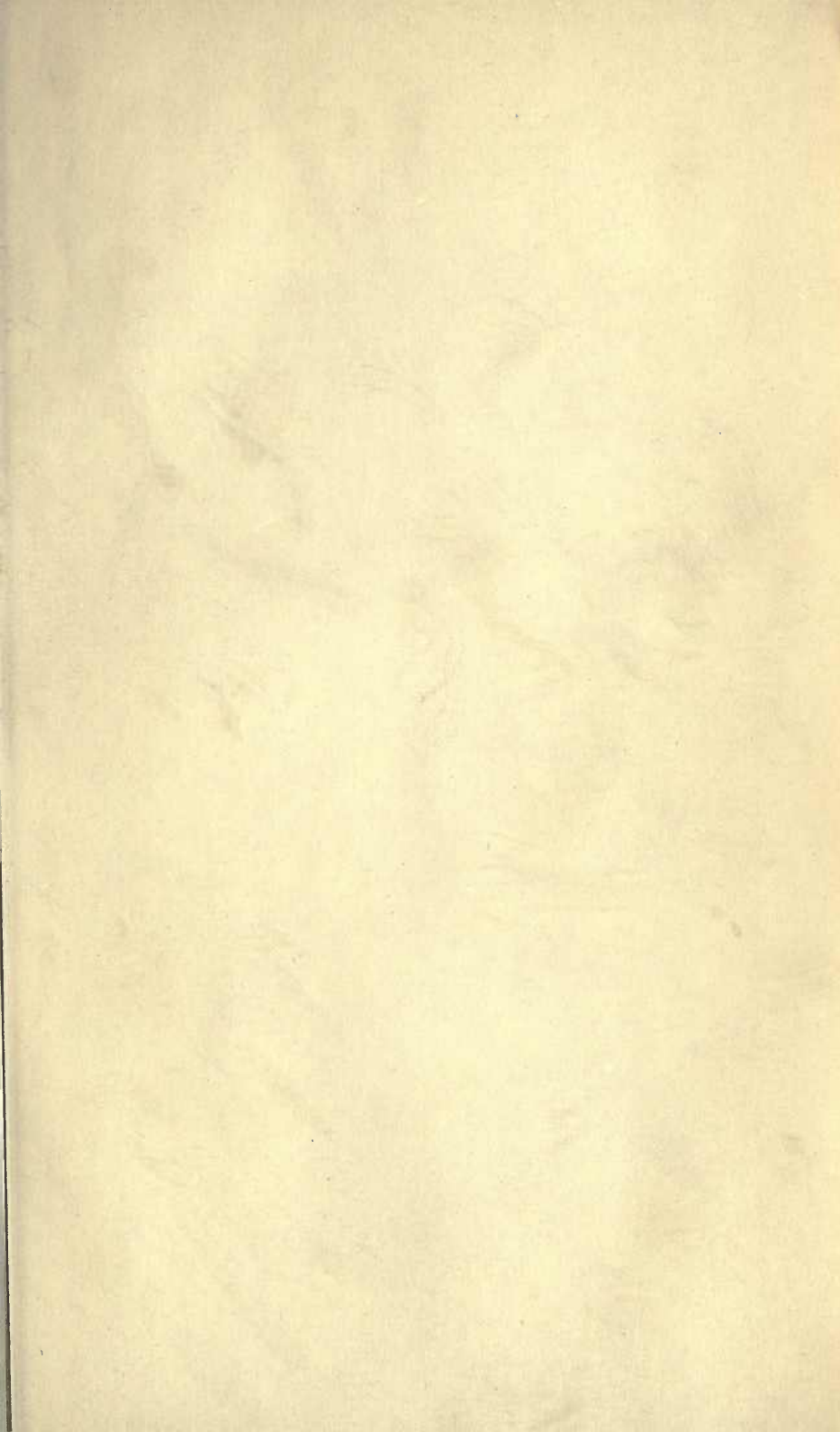
As to the first, one cannot but wonder how it is possible for the many serious and judicious clergymen, who have the care of youth in public schools and universities, to be so negligent of the principal point, their moral and religious behaviour; and that especially as the regulation of this would make all other parts of education go on with so much more ease and success: how schoolmasters can still persist in teaching lewd poets after the remonstrances of pious men against this practice, and the evident ill consequences: how the tutors in the universities can permit such open debauchery, as is often practised there: and how sacred learning, which surely is the chief thing for scholars intended for the christian ministry, can be allowed so small a share of time and pains both in schools and in the universities. But as I said before of the clergy in general, let those schoolmasters and tutors, who have religion at heart, speak fully to this point. I shall submit my own judgment, in both cases, entirely to the better judgment of pious men, that are conversant in these things.

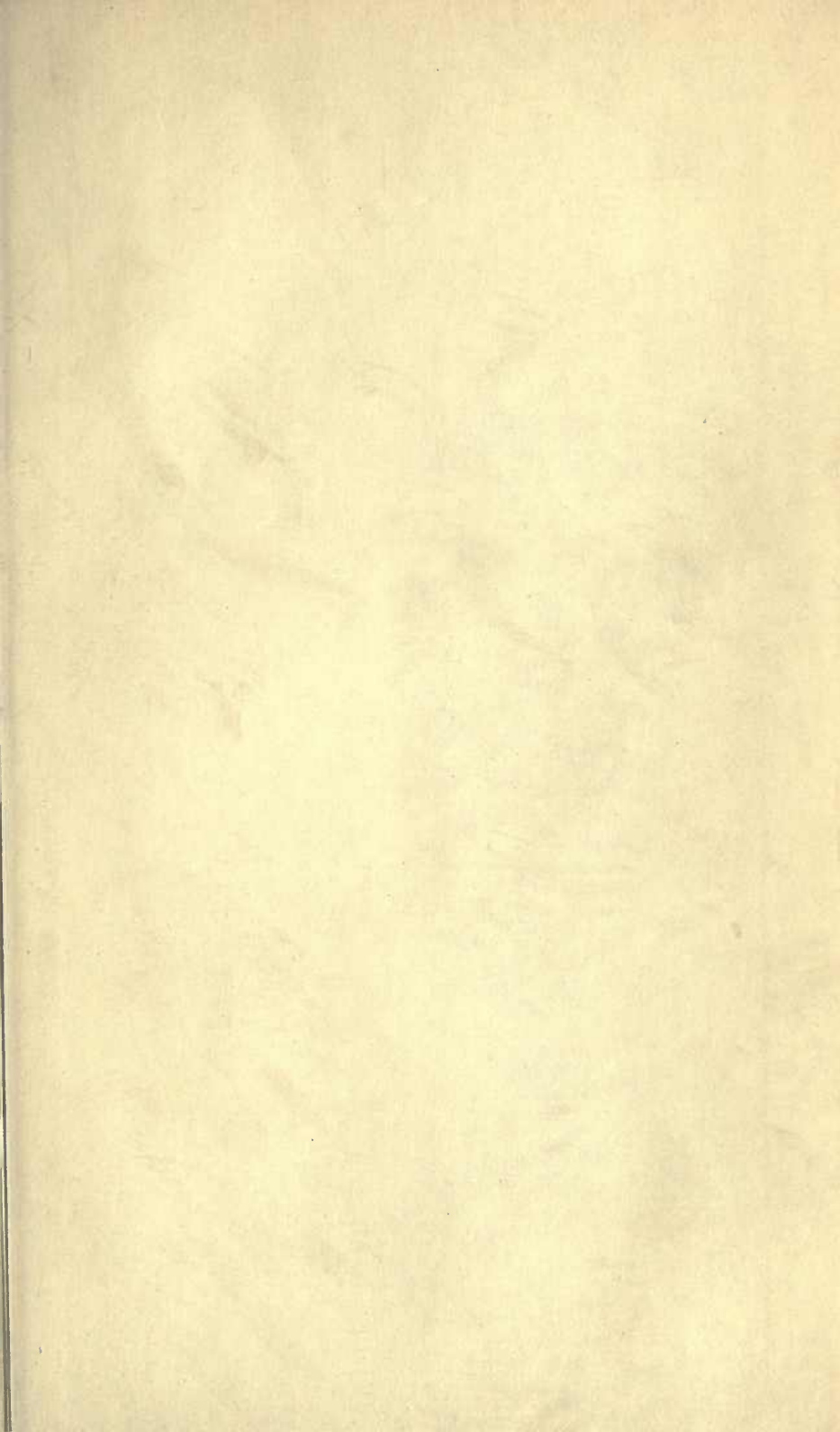
As to the education of princes, the case is every thing but desperate; so that one could scarce think of mentioning it, were it not for the great change in the face of things, which would immediately ensue, if but so much as one sovereign prince would set aside all self-regards, and devote himself entirely to the promotion of religion, and the service of mankind. I do not at all mean to intimate, that princes are worse than other men, proper allowances being made. On the contrary, I suppose they are just the same. And they have an undoubted right to the greatest candour and compassion from their subjects, on account of the extraordinary difficulties and temptations with which they are beset, as well as to the most profound reverence and entire obedience.

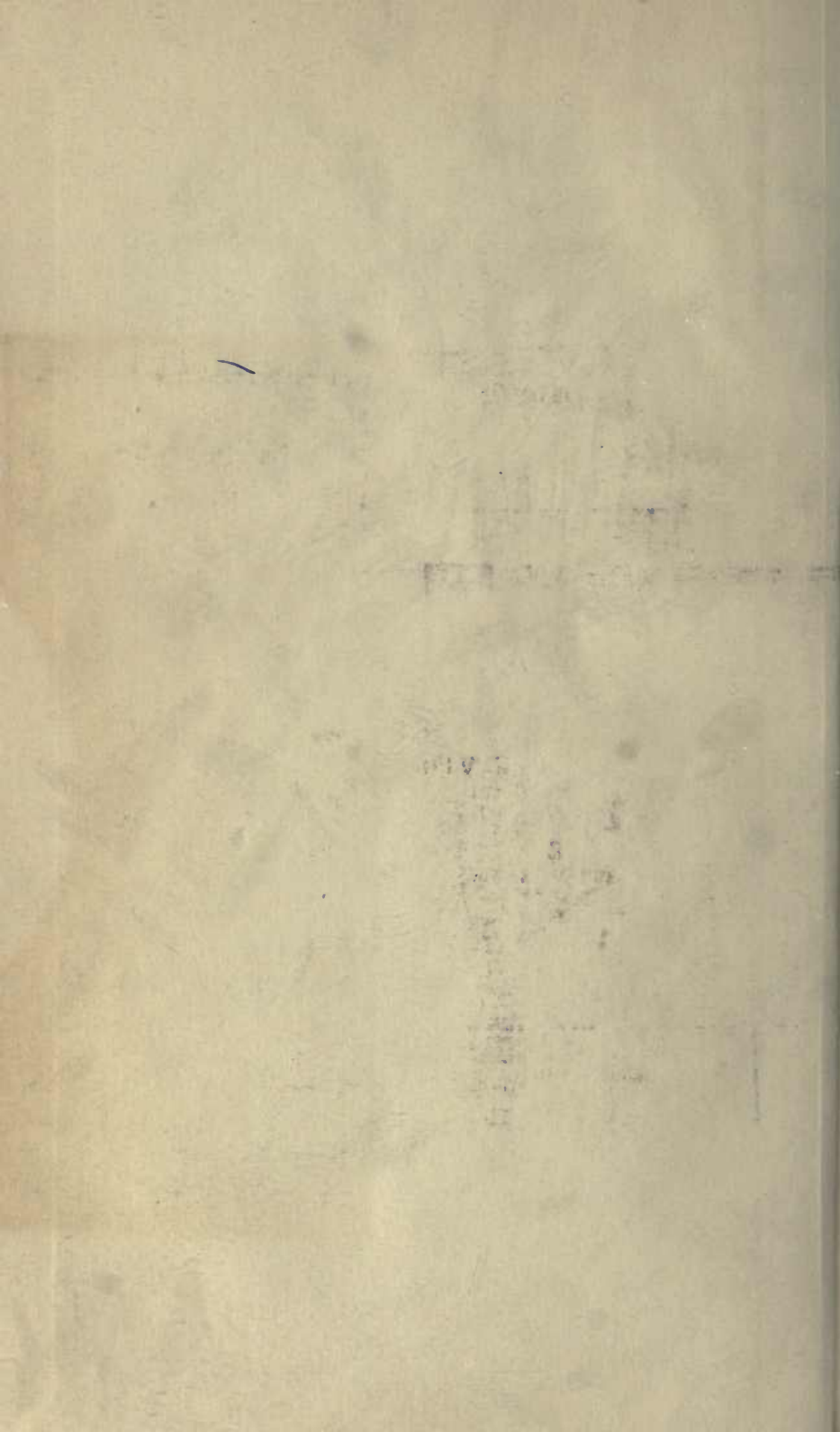
These are my real and earnest sentiments upon these points. It would be as great rashness to fix a time for the breaking of the storm that hangs over our heads, as it is blindness and infatuation not to see it; not to be aware that it may break. And yet this infatuation has always attended all falling states. The kingdoms of Judah and Israel, which are the types of all the rest, were thus infatuated. It may be, that the prophecies concerning Edom, Moab, Ammon, Tyre, Egypt, &c. will become

applicable to particular kingdoms before their fall, and warn the good to flee out of them. And Christendom, in general, seems ready to assume to itself the place and lot of the Jews, after they had rejected their Messiah, the Saviour of the world. Let no one deceive himself or others. The present circumstances of the world are extraordinary and critical, beyond what has ever yet happened. If we refuse to let Christ reign over us, as our Redeemer and Saviour, we must be slain before his face, as enemies, at his second coming.

THE END.







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