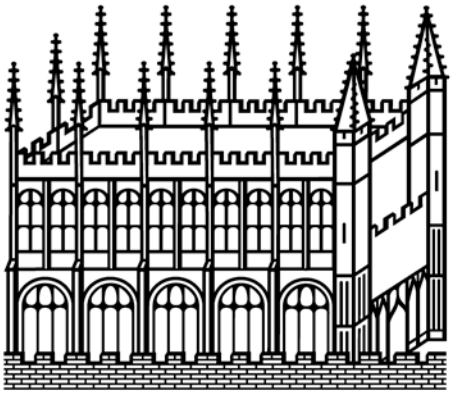


Bodleian Libraries

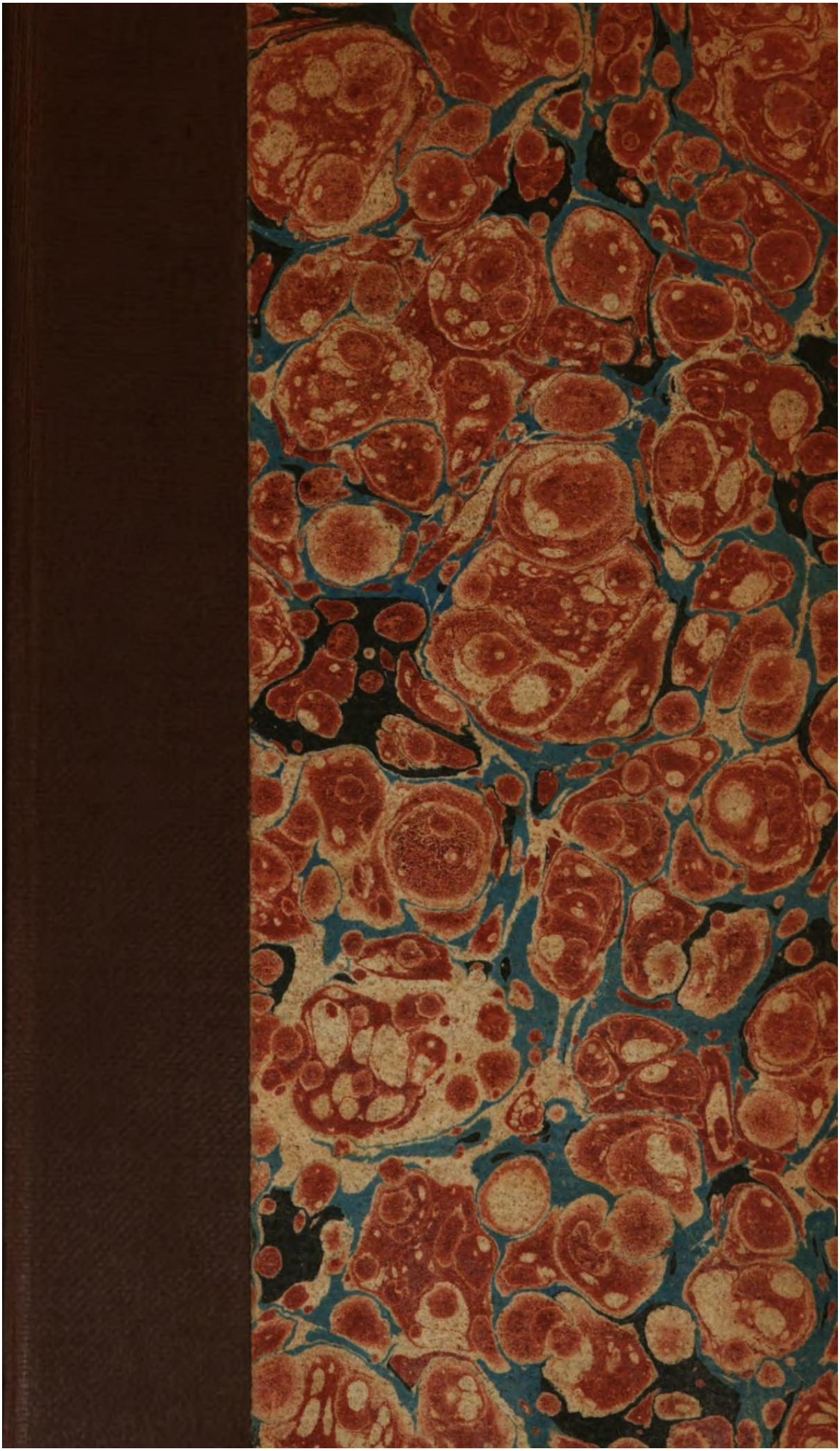
UNIVERSITY OF OXFORD

This book is part of the collection held by the Bodleian Libraries and scanned by Google, Inc. for the Google Books Library Project.

For more information see:

http://www.bodleian.ox.ac.uk/dbooks

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 2.0 UK: England & Wales (CC BY-NC-SA 2.0) licence.



Reflections on the works of God in nature and providence

Christoph Christian Sturm, Adam Clarke

W. Hopwood del. J. Hopwood sc.

"Who can withhold from himself the Consolation of relieving the Wants of the Destitute?"

Vol. IV. page 223.

Published by R. Edwards, N°6, Crane Court, Fleet Street, Jan.ʸ 1.ˢᵗ 1805.

REFLECTIONS

ON THE

Works of God

IN

NATURE AND PROVIDENCE,

FOR

EVERY DAY IN THE YEAR.

By CHRISTOPHER CHRISTIAN STURM.

TRANSLATED

By ADAM CLARKE, LL. D.

IN FOUR VOLUMES.

VOL. IV.

A NEW EDITION, REVISED AND CORRECTED.

LONDON:

PRINTED BY RICHARD EDWARDS,

Crane Court, Fleet Street,

FOR CRADOCK AND JOY, PATERNOSTER-ROW.

1810.

LIBRARY OF THE TAYLOR INSTITUTION
UNIVERSITY
30 MAY 1941
OF OXFORD

CONTENTS

OF

VOLUME IV.

	Page
A HYMN to the Praise of God	1
The Effects of Fire	3
The Instinct and Industry of Birds	6
Animal Reproductions	9
The Organs of Taste	13
The Government of God with respect to natural Events	16
The inexhaustible Riches of Nature	18
Petrifactions	22
All the Operations of Nature are gradual ..	25
The Fall of the Leaf	29
Different Kinds of Earth	31
Wine	35
The Migration of Birds	38
Variety of Trees	42
Temperature of the Weather in different Regions of the Earth	45
The Atmosphere of the Earth	49
Annual Proportion between Births and Deaths	52
Devastations in the Kingdom of Nature	55
The Circulation of the Blood	59
Proportions of the different Parts of the Human Body	64

Page
Of Navigation 67
Beasts of Draught and Burden 71
Winter Seed-Time 74
God's particular Providence 76
The Measure and Division of Time 79
The End of Summer 82
The Magnificence of God in the Works of Creation 86
The Law of Inertia 90
The Wants of Men 94
On Præsentiments 98
A Hymn on the Power and Providence of God 100
A Hymn of Praise 102
Marine Animals 104
The Wisdom of God in connecting all Parts of Nature 106
Bed 110
Reflections on the past Summer 114
Inconveniencies of the Night 117
Reflections upon Woods 119
The Sense of Feeling in Animals 124
A Recollection of the Benefits which we have enjoyed in Spring and Summer 127
Foreign Animals 130
Variety of Winds 134
The Chace 138
Dreams 140
The Universe is connected together, and every Part concurs to the Preservation and Perfection of the Whole 144
Common Salt 148
The Origin of Fountains 150

Page
Human Hair 153
The System of the World 156
Lobsters 160
The convenient and advantageous Situation of all the Parts of the human Body 163
Order and Regularity of Nature 167
Of Winter in the Northern Countries 171
Transformations in Nature 174
The Greatness of God discernible in little Things 177
Gradual Increase of the Cold 181
Reflections on Snow 184
Sleep of Animals during Winter 187
Use of Storms 191
Fortuitous Events 193
The Majesty of God 196
Motives for Contentment 200
Gratitude at the Remembrance of past Mercies 201
A Hymn of Praise 203
The Era of the Creation of the World, and the Formation of Man 205
The Utility of different Kinds of Timber 209
Remarkable Properties of certain Animals .. 212
The Formation of Snow 216
Winter Plants 218
An Exhortation to remember the Poor during the Severity of the Winter 220
Nature is the School for the Heart 224
The Divine Goodness manifested to us, even in Things which appear hurtful 228
Casual Revolutions in our Globe 231
Gratitude for our Clothing 235

Page
The Clothing of Animals 238
Thoughts on the Ravages of Winter 241
The Orang-Outang 245
Sagacity of Animals in procuring their Winter's Subsistence 249
The Advantages of Winter 252
The Elements 256
The Sun's Influence on the Earth 260
Tempestuous Winter Rains 263
Judicial Astrology 266
The Polar Star 269
Effects of Air when confined in Bodies 272
Music 275
Men compared with other Animals 277
A Calculation concerning the Resurrection .. 281
Reflections on the Nativity of Christ 283
The Place of Christ's Nativity 287
The Care which God takes of Men from their Birth 291
The Term of human Life 294
The Instability of earthly Things 297
How Time is generally employed 300
A Hymn of Thanksgiving at the Close of the Year 303

REFLECTIONS, &c.

OCTOBER I.

A HYMN TO THE PRAISE OF GOD.

ALL the heavenly host glorify the Power and Majesty of the Creator; and all the spheres which roll in the immensity of space, celebrate the wisdom of his works. The sea, the mountains, the forests, and the deeps, which a single act of his will has created; are the heralds of his love, and declare his power.

Shall I alone be silent? Shall I not chaunt a hymn to his praise?—My soul longs to soar up to his throne; and if my language be imperfect, let my tears express the love I feel to my Father and my Friend.

Yes, my tongue is that of a stammerer; but let the Most High see, that the holiest flame burns on the altar of my heart. But how shall I praise THEE? Could I take the beams of the sun for my pencil, I could not sketch a single ray of thy essence: the purest spirits can offer thee but imperfect praise.

By what power is it that millions of suns shine with so much splendor? Who has traced out the wonderful course of those rolling spheres? By what bond are they connected? By what power are they influenced? It is by thy breath, O Jehovah! It is by thy almighty word.

Hymn to the Praise of God.

All proceeds from thee. Thou didst speak, and worlds sprang into existence: then was our globe produced. The birds and fish, the cattle, and the wild beasts which sport in the forests; and finally, man himself came to inhabit it, and rejoice in thy works.

Thou cheerest our sight with delightful and variegated prospects; our eyes wander over the green field; or contemplate the forest which seems to touch the clouds: sometimes they view the sparkling dew-drops, with which thou waterest the flowers; or follow the windings of the limpid stream, in which the trees are reflected.

In order to break the violence of the winds; and at the same time to afford us the most enchanting prospects; the mountains arise, and from them the wholesome springs proceed. Thou waterest the dry vallies with rain and dew: thou coolest the air with the gentle breeze.

It is through thee that the hand of spring spreads the green carpet under our feet: it is thou who gildest the ears of corn; and tingest the grape with its purple hue; and when the cold comes to benumb nature, thou wrappest her up in a glittering veil.

By thee the human mind penetrates even to the starry heavens: by thee man knows the past, and can discern truth from falsehood, the appearance from the reality: by thee he judges, desires, or fears: by thee he conquers death, and escapes from the tomb.

Lord! My tongue shall rehearse thy mighty acts; only disdain not the praises of him who, before thee, is but a feeble worm. Thou who readest my heart,

deign to accept the emotions which it feels, and the gratitude which it is unable to express.

When thy mercy shall encompass my head with an immortal crown, and I shall be presented faultless before the presence of thy glory, then shall I exalt thy majesty with praises more sublime. O happy moment! long desired, and ardently wished for, hasten thy appearance! Then shall joy, without any mixture of sorrow, for ever overflow my heart!

OCTOBER II.

THE EFFECTS OF FIRE.

NOTHING in nature can exceed the violence of fire: and we cannot without astonishment, reflect on the effects which it produces in all bodies, and the extreme activity of its particles. But how few attend to these effects, or judge them worthy of their observation? In all our domestic affairs, we daily feel the beneficial influence of fire; and perhaps this is the reason that we commonly pay so little attention to it. It is my duty, however, to put the reader in mind of this divine benefit, and cause him, if possible, to feel all its worth.

One effect of fire, which falls under every person's notice, is that of *dilating* the bodies which it penetrates. A piece of iron, fitted to a hole in a metal plate, so that it may easily pass through when cold,

will not enter when hot: but let it cool, and it passes through as easily as before.

This dilatation produced by fire, is still more sensible in fluid bodies; particularly in wine, beer, and air: were it not for this the thermometer, by which we measure the different degrees of heat, would be entirely useless.

Observe the effect of fire on compact inanimate bodies: how soon do they melt and are changed, partly into a fluid, and partly into a solid of a different sort! It communicates fluidity to ice, oil, and all fat substances, and to metals in general. What renders these bodies susceptible of this change is, that their combination is more simple, and that the particles of which they are composed, are more homogeneal than those of other bodies. The fire penetrates their pores more easily, and succeeds sooner in separating the parts from each other. Hence it is, that some of these matters evaporate, when the fire penetrates them in too great a quantity, and with too much violence. Some solid bodies undergo other changes: sand, flint, slate, quartz, and spar, *vitrify* in the fire: clay is changed by it into *stone:* marble, calcareous stones, and chalk, are turned into *lime.* These different effects do not proceed from the fire, but from the different properties of those bodies on which it acts. It may produce three different effects on the same body, viz. melt, vitrify, and reduce it into lime: provided the body be composed of three different matters; the one *metalic,* the other *vitrifiable,* and the third *calcareous.* But fire by itself, produces no *new substance;*

it only discovers those parts which were before hidden in the bodies on which it acts.

As to *fluids*, fire produces two effects on them: it causes them to *boil*, and reduces them to *vapour*. These vapours are formed of the most subtile particles of those bodies, united to particles of fire. Hence it is that the vapours ascend, because they are lighter than air.

As to *animals*, fire produces through all parts of their bodies the sensation of warmth. Without this element, the life of man could not be preserved; for a portion of fire is requisite in the blood to keep it in motion. In order to preserve this motion and warmth, we every moment imbibe a portion of fresh air, to which fire is ever united: while, on the other hand, we expel the air which, having remained sometime in our lungs, had lost its elasticity, and was loaded with superfluous humours.

All these reflections should confirm us in this important truth, that God refers every thing to the welfare of mankind; and that he constantly places proofs of his love every where before our eyes. How many advantages accrue to us from the effects of fire only? By the union of fire and air the seasons are renewed; the moisture of the soil, and the health of men preserved. By means of fire, water is put in motion; and without this it would speedily lose its fluidity. By its gentle action in all organized bodies, it brings them gradually to their complete perfection. It preserves the branch in the bud; the plant in the seed; and the embryo in the egg. It prepares our food pro-

perly: it contributes much to the formation of metals, and renders them fit for use. Finally; when we collect the various properties of fire, we may see that through it the Creator has dispersed a multitude of blessings over the whole globe: a truth which ought to be deeply impressed on our hearts; and excite us to love the Author of our being; and inspire us with contentment. The more we search into the nature of things, the more we shall see that all concur to the accomplishment of the most perfect end. Every where we may observe magnificent plans; a wonderful order, connexion, and constant harmony between the *parts* and the *whole*; the *means* and the *end*. To be convinced of this requires no extraordinary exertions of mind: let us only contemplate nature quietly; and by the aid of our senses, we shall in most cases be fully assured, that all the works of God are full of wisdom and goodness.

OCTOBER III.

THE INSTINCT AND INDUSTRY OF BIRDS.

Birds have already afforded us many innocent pleasures. Now that a great part of these sprightly inhabitants of the air have disappeared, and will not return for a considerable time, let us once more reflect upon them; and let the subject excite us to meditate with the most lively sentiments of gratitude and joy on their Creator and ours. We may find great

pleasure in considering the different instincts which God has given to birds. None of these instincts is superfluous, or useless; each is indispensably necessary to the preservation and wellbeing of the animal; and the little we know of this subject is sufficient to give us the most exalted idea of the wisdom and goodness of God.

In the first place, when we reflect on the instinct which leads birds to move; we may find in that alone, a just subject of admiration. Experience may convince us that bodily motions require more than strength and wellformed pliant limbs. It is not till after many trials and falls that we are able to balance ourselves; to walk with ease, to run, leap, rise up, and sit down: and yet these motions seem more easy to bodies constructed like ours, than to birds. These animals also have two feet; but their bodies do not rest perpendicularly on them, they project both before and behind; and yet a chick will stand straight, and run about almost as soon as it is out of the shell. Young ducks, just hatched by a hen, know their own element, and swim about in the water without example or instruction. Other birds know how to rise up from their nests into the air, balances themselves, pursue their course, making equal strokes with their wings in true time; stretch out their feet to balance their body; use their tail like an oar, or rudder, to direct their flight; and make long journies from their native country to unknown regions.

They also provide their food with admirable art! An art which they bring into the world with them. Some

birds, though not aquatic, live on fish: they must necessarily find it more difficult to seize their prey than water-fowl. Who teaches them their natural instinct in this case? They stand on the brink of the strange element, and when a shoal of fish comes (which they can discover at a distance) they pursue them, skim along the surface, and suddenly dive into the water, and carry off a fish. Who gave the birds of prey their piercing sight, courage, and the weapons, without which they could not possibly subsist? Who points out to the *stork* the place where she may find frogs and insects to feed on? In order to find them she must seek them, not only in the meadows, but also in the furrows of the field; she must continue her search till near the morning, when the other birds awake. What incredible strength must the *condour* have, seeing it can carry away a sheep, or a deer; and prey upon an ox! How can we reconcile with the wild nature of the *quail*, (a characteristic which no education can entirely correct) that maternal instinct which causes her to adopt little birds of every species, which she not only takes under her protection, but bestows on them the tenderest cares! What cunning does the *crow* use to secure the prey, which she cannot devour at once? She hides it in places such as other crows do not frequent: and when she is hungry again, how well does she know the magazine where she has laid it up!

We might spend many years in multiplying observations of this kind; without being able to explain the principal mysteries contained in the instinct of birds. But even the little we do know of this subject

may tend, in a most pleasing manner, to engage those whose hearts are disposed to contemplate the works of nature, and to exalt them to still more noble pursuits. To this point I wish to conduct the reader. Let none be contented with barely considering the instinct and faculties of birds: this should be only the first step to sublimer meditations. Let our admiration of these faculties raise our hearts to that God from whom *they* have received them: and who has prepared and combined so many things for the subsistence and multiplication of this part of his creatures. Let us not say that *nature* teaches these birds this art, or that industry which surprises us so much: if you separate nature from its Author, it is then a word destitute of meaning. Let us rather glorify the Creator, and acknowledge that it is HE alone who gives wisdom even to the fowls of the air.

OCTOBER IV.

ANIMAL REPRODUCTIONS.

HERE we discover a new scene of wonders which seem totally to contradict the principles which have been adopted, relative to the formation of organic bodies. It has long been thought, that animals could only be multiplied either by eggs or young ones: but, this principle must be admitted with some caution; as it is still liable to several exceptions. It is now found that there are some animal bodies, which may be di-

vided into as many complete bodies as we please; for each part will speedily repair what is deficient, in order to make a complete animal, after having been separated from its original. It is now no longer doubted, that the *polypus* belongs to the class of animals: although it resembles plants, not only in its form, but also in the mode of its propagation. The bodies of these zoophites may be cut either across, or lengthwise; and these bits will become so many complete *polypes:* even from the skin, or smallest bits cut off, there will grow one or more of these animals. And, if several bits cut off be put together at the ends, they will reunite so perfectly, and nourish each other, that they soon become one and the same body. This discovery has given rise to other experiments, which have proved that *polypes* are not the only animals, which can live and grow after being cut in pieces.

The common *earthworm* will multiply after being cut in two. To the tail part there grows a head, and the two parts then become two complete worms. After having cut the worm in two, it would be in vain to attempt to unite the parts; they will never join. They remain for some time in the same state, only grow a little smaller: afterwards, at the cut extremity, a little whitish button begins to appear, which grows larger, and then lengthens by degrees. Shortly after rings appear, which are at first very close together, but extend insensibly on all sides. It then forms itself new lungs, a new heart, a new stomach, and with these several other organs.

The following experiment may be made daily with

nails. Cut off their heads close to their horns, and in a certain space this head will be reproduced.

A similar change takes place in *crabs:* break off one of their claws, and put the animal again into its element, and in some time the claw will be entirely reproduced.

Another very wonderful experiment has been made by Mr. *Dumahel*, on the thigh of a *chicken*. After the thigh-bone, which had been broken, was perfectly restored, so that a callus was completely formed, he cut off all the flesh even to the bone; the parts were gradually reproduced, and the circulation entirely restored!

We are convinced then that some animals are perpetuated by being divided: and we cannot doubt, that the young of certain insects may be produced in the same way as a branch is from the tree: that they may be cut in pieces, and the smallest piece become a complete animal: that they may be turned inside out like a glove, cut in pieces, and then turned again; and nevertheless still eat, live, grow, and propagate! Here a question arises, which no naturalist can answer in a satisfactory manner: How can these parts, thus cut off, be again reproduced? It must be taken for granted in this case, that germs are spread through every part of the body; while in other cases they are confined to one part. These germs unfold themselves, when they meet with proper nourishment: thus in cutting one of these animals, the germ is furnished with the requisite juices, which would have been conducted elsewhere, had not their course been thus in-

terrupted. The superfluous juices cause those parts to unfold themselves, which without this would have continued attached to each other. Every part of the polype, and the worm, contains in itself all the viscera necessary to the animal; as the bud does all the rudiments of the tree. These parts, essential to life, are dispersed over all the body, and the circulation is carried on even in the smallest parts.

As we cannot comprehend all the means which the Author of Nature may make use of to distribute life and feeling through such a prodigious multitude of beings; so we must not assert that the animals already mentioned are the only ones, which, in reference to their mode of propagating, are exceptions to the general rule. The fecundity of nature, or rather the infinite wisdom of the Creator, must ever surpass our weak conceptions. The hand that has formed the *polypus* and the *earthworm*, has shewed us that it can, when necessary, simplify the animal constitution. It has simplified them more still, and descending always by insensible gradations, has arrived at the utmost limits of animal nature: but of these utmost limits we are ignorant: let us feel a deep conviction of this ignorance, and admire and adore the supreme wisdom. It is never more sublime than in those cases, in which it is impossible for us to discover its footsteps.

These animal reproductions should remind us of the great change which shall take place in the day of the resurrection. What we see now in miniature, will be then manifested in magnitude. What we now observe in other bodies, we shall then experience in our own:

from the smallest particles a body will spring up, fitted for the enjoyment of an eternal felicity.

OCTOBER V.

THE ORGANS OF TASTE.

We should not be so happy as we really are, if we had not the faculty of distinguishing different kinds of meat and drink by *tasting*. The great variety of fruit at this season, may naturally lead us to reflect on this subject. Our pleasure would be greatly diminished, if the *pear*, the *apple*, the *plum*, and the *grape*, had all the same flavour. The power to distinguish them, or in other words, the sense of *taste*, is a gift of God's goodness, and a proof of his wisdom, on which we should reflect with gratitude to our Creator.

But by what means do we *taste*, and distinguish our food? The *tongue* is the principal organ: and, that it may answer this end, its surface is covered with nervous papillæ, by means of which we distinguish the flavour of the salts which dissolve on the tongue. *Tasting* therefore depends on the nerves; and this is clearly seen in dissecting the tongue; for, after the membrane which covers it is taken off, a multitude of roots where the nerves terminate appear, and these are the nervous papillæ that give us the sensation of *taste:* and where these are not, the sensation is wanting.

When we put highly flavoured things under the

tongue, we are scarcely sensible of it till they are attenuated; and till we bring them on its surface; then we distinguish their flavour: consequently the sensation of taste is in its full force only where the nervous papillæ are most numerous; and this is the part nearest to the throat. To be further convinced that tasting is occasioned by the nerves, we need only examine the tongue of a dog or a cat. On their tongue the nervous papillæ are situated towards the root; the forepart is destitute; but the palate is covered with them: hence it is that these animals have no sensation of taste in the tip of their tongue.

Let us continue our reflections for a few moments longer on this subject. How ingeniously is this organ of taste formed; all the parts of which no anatomist has yet been able to find out? Is it not a proof of great wisdom, that the tongue should have more nerves and fibres in proportion than any other part of the body; and that it should be full of small pores, that salts and all savoury particles should penetrate deeper and in greater quantity into the nervous papillæ? Is it not a proof of the same wisdom, that the branches of the nerves which are spread over the palate and throat to assist mastication, should extend their branches towards the nose and eyes, as if to inform the organs of sight and smelling that they should contribute their part toward the discernment of food? Another thing worthy of admiration is, the duration of the organs of taste. Notwithstanding the delicacy of their structure, they last longer than instruments of stone or steel. Our clothes wear out, our flesh fades,

our very bones dry up; but the sense of taste survives them all. What admirable designs may we discover even in the apparatus of these organs! O man, thou art the only creature that knows he is endowed with senses; and the only one capable of raising himself towards God by the contemplation and use of these organs.

Strenuously endeavour by the assistance of Divine grace to make a proper use of these faculties. If *thou* wilt not acknowledge the goodness of thy Creator, who shall render him that homage? Thou enjoyest more through the sense of taste than any other creature: for the animals have but few things on which they like to feed; but thy Creator has prepared for thee, meats and drinks as various as they are abundant. Reflect on the abundance which the animal, vegetable, and mineral kingdoms provide for thee. "Heaven and earth, air and ocean, pay thee tribute. Whereso-ever thou turnest, thou mayest behold the gifts of God. The tops of the mountains, the bottom of the vallies, and the beds of lakes and rivers, furnish thee with aliments and pleasures."

It is reasonable that we should highly esteem this gift of our Creator; but let us not esteem it beyond the design of the donor. The sense of taste is given us to be the means of accomplishing a noble end. How indescribably foolish would it be to make the whole of our happiness consist in those pleasures, of which this sense is the organ! and to live only to please the palate with savoury meats and delicious drinks! Let us take care not to bring ourselves to a

level with the brute, whose principal happiness consists in eating and drinking. Let us remember that we have an immortal soul, which cannot be satisfied but by the Supreme Good. To have a true taste for this good, earnestly to desire to be nourished by it, is that wherein the wisdom and true felicity of the man and the Christian consist.

OCTOBER VI.

THE GOVERNMENT OF GOD WITH RESPECT TO NATURAL EVENTS.

All the events which take place in the sky, on the earth, in the sea, and in the air, are regulated according to preseribed natural laws. But it would be foolish not to acknowledge a particular influence of God, which directs natural things according to his own views; and causes them to concur in accomplishing his own designs. He makes use of natural causes to chastise mankind; and thus, at his command, the air is pure or corrupt, the seasons fruitful or unproductive. He prevents or assists the designs of men; sometimes by winds and storms; and sometimes by the flux or reflux of the sea. It is true, that God does not in general interrupt the course of nature; but it is equally true, that nature cannot act without his energy and concurrence. The parts of which the visible world is composed cannot use their power as they please; and God can influence his creatures without

reversing the order of nature. Fire, water, wind, and rain, have their natural and particular causes, and particular virtues: but God uses them in a manner suitable to their nature, to execute his designs. He makes use of the heat of the sun to warm the earth, and render it fruitful. He employs the rain and the wind to purify and cool the air, but it is always in such a way, and in such a degree, as best consists with his own views.

A great part of the blessings and evils which we experience here below, proceed from surrounding objects; but as God interests himself in all that happens to man, he must of course influence these objects, and act through every part of nature. On this are founded the rewards and punishments of virtue and vice. Peace and prosperity crown the one; and when he pleases, famine and pestilence scourge the other. In a word, all natural causes are in the hand of God, and immediately under the guidance of his providence. Men themselves furnish proofs of this. How often does their industry triumph over nature! They cannot indeed change the essence of things, but they know how to use natural causes so that effects may result from them, which would never have taken place had it not been for the art and direction of man. Now, if the Most High has in some measure subjected natural things to human industry, with how much more reason may he reserve to himself the direction and government of all these things?

From all this we may conclude, how necessary it is that a particular Providence should watch over the go-

vernment of the world. Natural causes are doubtless excellent instruments; but, in order that they may be useful, they must be put into the hands of a skilful workman. It would be an unreasonable wish that God would change the established laws of nature: for instance, if we should fall at any time into the fire or into the water; that we should not be burnt by the one, or drowned in the other. Nor is Divine Providence obliged to preserve us, when we shorten our lives by our own intemperance: for it is not to be expected that God will work miracles to save men from those evils which they bring upon themselves by their irregularity and misconduct. It is our duty to attribute to a particular Providence all those kind dispensations which relieve our wants, and fill our hearts with joy. But all the disorders of nature are at the same time effects of the wrath of God, who makes use of them for the punishment of sinners. It is on this truth, that on one hand we found our prayers and supplications for the blessings of heaven, peace of conscince, and fruitful seasons; and on the other, our thanksgivings to God for the manifold mercies we receive from his hand.

OCTOBER VII.

THE INEXHAUSTIBLE RICHES OF NATURE.

NATURE is so liberal to us, so abundant in means to supply the wants of all creatures, so rich in gifts,

that they can no more be numbered than the drops of water in the ocean.

How many things does one single man need in the course of a life of sixty years! How much is necessary for eating, drinking, clothing; for the sweets, conveniencies, pleasures, amusements, and duties of society; without mentioning extraordinary cases, and unforeseen wants and accidents. From the king to the beggar, in all states, conditions, and ages in human life; from the infant to the old man; in all nations of the earth, and according to the different modes of life of the inhabitants; each person has his particular wants: what suits one will not suit another, and all require different kinds of food, and means of subsistence. Notwithstanding this, we find that nature provides for all, and liberally supplies every want; so that each individual receives all that is necessary for his support. Since the foundation of the world the earth has not failed to open her bosom; the mines have not been exhausted; the sea always furnishes subsistence for an infinity of creatures; and plants and trees have always produced seeds and germs, which shoot forth and become fruitful at their proper seasons: beneficent nature varies her riches, that she may not be too much exhausted in one place; and when one kind of plants, fruits, and other provisions begins to fail, she produces others, and does it in such a manner, that the desire and taste of mankind should lead them to prefer those which are most abundant.

Nature is also a wise œconomist, who takes care

that nothing shall be lost. She knows how to turn every thing to profit. Insects serve for food to the largest animals: and those are useful to man in one way or other. If they provide him not with food, they afford him clothing, or arms and means of defence: and some which are not profitable for any of the above purposes, procure him at least useful medicines. Even when disease diminishes certain kinds of animals, nature repairs that loss by an increase of others. Even the dust, dead carcases, putrid and corrupted matter, are all made use of by her, either for food to certain insects, or manure for the earth.

How rich also is nature in beautiful and delightful prospects! Her most beautiful attire requires only light and colours: with these she is abundantly provided, and the appearance which she presents us, is continually varied, according to the different points of view in which they are seen. Here the eye is struck with beauteous forms; there the ear is charmed with melodious sounds; and the smell is regaled by exquisite perfumes. In other places art comes in to add new embellishments to nature, by a thousand labours of her industry. The gifts of nature are so abundant, that even those which are continually used never fail. She spreads her riches over all the earth: she varies her gifts according to the different countries: she gives and receives: she establishes by means of commerce such relations and connections between different countries, that her presents pass through innumerable hands, and increase in profit and value by this continual circulation. She combines and mixes her gifts,

as the physician does the ingredients in his prescriptions: the great and the small, the beautiful and the homely, the old and the new combined and properly tempered together, form one whole, equally useful and pleasant. Such, in the hands of God, are the inexhaustible riches of nature.

And what are we, that we should daily enjoy these blessings! How often has kind Nature in our behalf opened her liberal hand, and shed around us her abundant gifts! But how many spiritual blessings, infinitely more precious, fall to our lot! *Nature* is rich, but *grace* is infinitely more so. The former can only supply our temporal necessities: the latter satisfies the wants, and enriches the poverty of our souls. The former undoubtedly provides a variety of pleasures: but to the latter we owe blessings that shall last for ever! Nature charms and invigorates our senses: grace seizes on the whole soul, and penetrates it with ineffable joy.—May we know and feel that we owe our all to the goodness of God! May all the blessings with which he loads us from the kingdom of nature, and the kingdom of grace, kindle our love more and more, and perfect our confidence in him! "What! Shall *we* not glorify so good a God! Shall *we* not acknowledge *his* bounty! Shall *we* shut our ears when *he* calls! Shall *we* refuse to walk in the path which *he* has marked out! No! Let us rather meditate on the love with which he has honoured us; and let us love *him* who has first loved *us*. The Lord has never forgotten us a moment since we began to exist; and while we live may we never forget HIM!"

OCTOBER VIII.

PETRIFACTIONS.

The transition of different substances, from the animal or vegetable kingdom into the mineral, is a peculiarity of natural history, which is well worth our attention. *Petrifactions* are properly a species of medals, the explication of which casts a great deal of light on the natural history of the earth.

The first thing to be remarked in petrifactions is their external form: this proves that these fossils have indubitably appertained to the animal and vegetable kingdom. We seldom find petrifactions of any part of the human body; and those of quadrupeds are nearly as scarce. The most extraordinary skeletons found in the earth are those of elephants; some of which are found even in different parts of Germany. Petrifactions of aquatic animals, are frequently to be met with: sometimes whole fish are found, the smallest scales of which may be easily distinguished. But all this is nothing in comparison of the multitude of shells and worms, apparently converted into stones in the bowels of the earth. Their number is not only prodigious, but there are so many different species, that living animals, corresponding to some of them, are entirely unknown. Petrifactions of marine substances are found in great abundance in all countries. They are found even on the tops of high mountains, some thousands of feet above the level of the sea. Many are found at different depths in the earth. All sorts of plants and parts of vegetable substances, are

found petrified in different strata of the earth: but these are often the impressions only, the substances themselves being entirely destroyed. In many places whole trees are found buried at different depths in the earth, apparently converted into stone; these petrifactions however do not appear to be of an ancient date. But how have all these petrified substances got into the earth! And particularly how could marine substances get to the tops of such high mountains! How could animals, whose ordinary habitation is the sea, and which belong to no other element, be transported so far from their natural abode?

For this phenomenon different causes may be assigned. Probably these petrifactions prove that the water has formerly covered the greater part of the earth: and indeed, as in every place we search from the tops of mountains to the greatest depths of the earth, we meet with all sorts of marine substances; it seems as if it could not be accounted for otherwise. The great quantity of petrified shell-fish found at considerable heights, and which form regular beds, incline us to believe that these heights made formerly a part of the bottom of the sea; and this opinion acquires strength from this consideration, that the present bottom of the sea exactly resembles the surface of the earth. We have but a very imperfect knowledge of the manner in which nature brings about these petrifactions. It is certain that no body can undergo this change in the open air; for animal and vegetable substances consume or rot in this element: therefore the air must be excluded from the places in which these

petrifactions take place, or at least, its action must be suspended. Dry earth has no petrifying quality: as to running waters, they may form a crust on particular bodies; but they cannot change them into stone. The very motion of the water prevents this. It appears, therefore, probable, that petrifactions require soft moist earth, greatly impregnated with dissolved stony particles. These stony fluids penetrate the pores or cavities of animal and vegetable substances and become consolidated, as the parts of these bodies are dissipated by evaporation, or absorbed by alcaline substance.

From what has been remarked, we may draw some consequences which throw light on this phenomenon. 1. All animals and vegetables are not equally proper to become subjects of petrifactions: for in order to this they require a certain degree of firmness, which prevents their rotting before this operation is completed. 2. Petrifactions are principally formed under the earth; and the place where they are formed must neither be too wet nor too dry. 3. All stones which include petrifactions, or constitute the matter of them, are not original productions, but such as are daily-formed: such as calcareous stones, indurated clay, compacted sand, the loadstone, and similar substances. 4. Petrified bodies are of the nature of these stones, being sometimes calcareous, sometimes like slate, &c. 5. Hence it appears, that *petrifaction* is not the transmutation of one body into another, but properly the substitution of one body for another; whose appearance

and form the stony particles assume, for the reason given in the *first* inference.

If petrifactions were of no other use than merely to throw light on the natural history of our globe; even on that account they highly deserve our attention. But we may also consider them as proofs of the operations and changes which nature works in secret; and in this also the wonderful power and wisdom of God are particularly manifested.

OCTOBER IX.

ALL THE OPERATIONS OF NATURE ARE GRADUAL.

We may observe an admirable gradation in nature; or an insensible progress from the most simple to the most complex perfection. Therefore there is no intermediate space which has not some characteristic of what precedes and what follows. In a word, there is neither void nor a break in nature.

Dust and earth are the principle and matter of the composition of all solid bodies. Therefore these are found in all bodies decomposed by human art. From the union of earth with *salts*, *oils*, *sulphurs*, &c. result different kinds of earths, more or less compound, light, or compact. These lead us insensibly to the *mineral kingdom*. There are a great variety of *stones*; and their form, colour, size, and hardness, are very different. In them we find all sorts of saline and metalic particles; whence minerals and precious stones

proceed. In the latter class of stones some are found which are fibrous, and have laminæ, or a kind of leaves, as *slate, talc, lythophytes,* or stony marine plants; the *amianthus,* or stony-flower of mines; and these lead us from the mineral to the vegetable kingdom. The plant which appears to occupy the lowest part of vegetable gradation is the *truffle.* Next come the numerous species of *mushrooms* and *mosses,* between which *mould* on paste, &c. seems to form the connecting medium. All these plants are imperfect, and properly only constitute the limits of the vegetable kingdom. The most perfect plants are divided into *three* grand families, which are distributed over the earth, viz. *herbs, shrubs,* and *trees.*

The *polypus* seems to unite the vegetable and animal kingdoms. From its outward appearance this singular production might be taken for nothing more than a mere plant, were it not seen to perform real animal functions. This *zoophite* seems to form the connecting link between plants and animals. *Worms,* which are at the commencement of the animal kingdom, lead us to *insects.* Those worms whose bodies are enclosed in a stony or scaly shell, seem to unite *insects* and *shell-fish.* Between them, or rather next to them, are found reptiles; these by means of the *water-snake,* are united to *fish.* The *flying-fish* leads us to *fowls.* The *ostrich,* whose feet very nearly resemble those of the *goat,* and who runs rather than flies, seems to connect *birds* with *quadrupeds.* And the *ape* joins hands with *quadrupeds* and *men.*

There are gradations in human nature, as well as in

all other things. Between the most perfect man and ape, there are an astonishing multitude of links. And how many must there be between the most perfect man and the lowest angel: and how many more still between the highest archangel and the Creator of all things! Here new gradations become evident; new plans, new beauties, and new perfections! But the gradations in the spiritual world are hidden from us by an impenetrable veil. However, for our comfort, we understand from revelation the immense space between God and the cherubim is filled by Christ, who is God manifested in the flesh. By him human nature is exalted and glorified: by him we are raised to the first rank of created beings; and have liberty to approach the throne of the Supreme God.

Let us reflect on these gradations of nature: the little that has been said may suffice to shew us, that every being is intimately blended in its beginnings and endings with others: and that the whole universe is linked together in all its parts. There is nothing in it without design: nothing but what is an immediate effect from a preceding cause; or which does not determine the existence of something that is to follow. Nature proceeds not by *leaps:* all goes on *gradually* from the component to the composed: from the least to the most perfect: from the nearest to that which is furthest off: from inanimate to animate; from corporeal to spiritual perfection! But how imperfect still is our knowledge of this immense chain of beings! We have only a glimpse of this gradation; know but

a few of its boundaries, and some ill-connected, broken links of the great chain.

And yet, defective as our knowledge is in this respect, it is nevertheless sufficient to give us the highest idea of this admirable series, and infinite diversity of beings which constitute the universe. And all leads us to that Infinite Being, between whom and us there is a distance which no understanding can measure. He is the only being who is beyond all the links of the chain of nature. From the grain of sand to the seraphim, every being owes its existence to him. Let us often endeavour to ascend to him on the ladder of his creatures. From the dust out of which we were formed, let us on the wings of devotion soar to that God who is the first of beings; the infinite, the incomprehensible Jehovah! Let us long for the time in which we shall be introduced into the blessed assembly of glorified spirits; where the universe shall be unveiled before us, and where we shall know God as we have been known. While we live here below, we go on to perfection by insensible gradations. We proceed from ignorance to wisdom and understanding; from corporeal to spiritual; from weakness to spiritual strength. "Our life is only beginning; it is only in its dawn: let us expect a greater light.—Let us not murmur against him, who wills that we should sojourn here awhile in dust and darkness: he loves that dust which he has formed; and if found faithful, will one day raise us to the most exalted degrees of glory."

OCTOBER X.

THE FALL OF THE LEAF.

We already begin to see the ravages which the approach of winter makes in the forests, and in the gardens. All plants, a very few excepted, lose their leaves, which are one of their principal ornaments. But what can the cause of this be? That which seems the most natural is, the cold: for as soon as the first frost sets in, the leaves fall in abundance, and the vegetables are soon spoiled of their dress. This indeed cannot be otherwise, seeing the cold causes a stagnation of the sap in plants, and prevents the leaves from perspiring. But cold is not the only cause of their fall: for this happens even in those winters when there is no frost; and to those trees which are kept in green-houses to preserve them from the cold: it is probable, therefore, that other causes concur to strip the trees of their leaves; perhaps they wither because the root no longer furnishes sufficient sap for their perspiration: for it is evident that the branches increase for some time in thickness, when they cease to grow in length. When therefore the branches continue to grow thick, and the stalks of the leaves do not increase, their fibres must be necessarily detached from the fibres of the branches, and then the leaves must fall of course.

But we must not suppose that these fallen leaves are entirely lost, and of no manner of use. Both reason and experience declare the contrary. Nothing is useless in the world: nothing perishes: and consequently

the leaves which fall from plants and trees have their use; they rot and become manure for the earth. Snow and rain separate the salts from them, and convey them to the roots of the trees. Further, where the fallen leaves are strewed on the ground, they preserve the roots of young plants, become a covering for seeds, and keep up a proper degree of humidity and warmth. This is particularly the case in respect to the leaves of the oak. They furnish an excellent manure, not only to the tree itself, but also to the young shoots: and they are very useful for forest pasturages, as they favour the growth of the grass, which they cover, and on which they rot. These advantages are so important, that fallen leaves are seldom collected to make dunghills of, unless they have fallen in such abundance as rather to choak the grass than to nourish it.

Leaves may serve for manure in various ways. They are spread in stables instead of straw: and they make a very good litter for cattle; and sometimes they are mixed with other kinds of manure. The mould they produce is very useful in gardens, where layers are made of it, which contribute much to the growth of fruits and young trees.

But it may be said, that the fall of the leaf is peculiarly destructive to a multitude of insects, which live on the leaves of plants and trees. It is true, that autumns weeps away whole swarms of insects with their nests: but does it follow hence that these creatures perish? Why may they not live even on the ground, under these very leaves which cover and protect them from the cold?

The *fall of the leaf,* is an emblem, not only of life, but of the frailty of all earthly things. *" I am as a falling leaf; death walks by my side: to-day I may wither; and to-morrow be converted into dust."*

I hang by a thread, and may be deprived of all my beauty and vigour in a moment. A little cold air may put a period to my life; and my body be turned into earth. But if we leave behind us the well-ripened fruits of righteousness, love, and holiness; we shall die honorably, and may leave this world without regret.

OCTOBER XI.

DIFFERENT KINDS OF EARTH.

We can only form conjectures concerning the inside of the earth. Those who work in mines have not been able to go lower than 900 feet. Were they to attempt to go further, the great pressure of the air would kill them; supposing even that they could protect themselves from the water which increases in proportion as we descend. But what is the depth of 900 feet in comparison of the semi-diameter of the earth, which is 3982 miles? The inside of the earth must consequently be in a great measure unknown to us. Miners themselves have scarcely as yet penetrated through its first crust. All that we know is, that after we have dug some hundreds of feet in depth, this upper crust is found to be composed of different *strata,* or beds,

placed one on the top of the other. These strata or layers are very much mixed, and their direction, matter, thickness, and relative position vary considerably in different places.

Generally under common earth in gardens clay and fat earth are found: and sometimes alternate layers of clay, sand, and marle.

The manner in which these different strata of earth are classed is quite arbitrary: they may be less or more extended; but in comparing the accounts given by different writers, the following appears to be the best; and this divides earths into *seven* different classes.

1. *Black Earth:* this is composed of putrified vegetable and animal substances. It contains many salts and much inflammable matter. This is what is commonly called *dung*.

2. *Clay:* this is more compact than black earth, and retains water longer on its surface.

3. *Sandy Earth:* this is hard, light, and dry, it neither retains water, nor is dissolved in it. It is the worst kind of earth, though some kind of plants may grow in it.

4. *Marle:* this is softer, more mealy, less hard, and attracts moisture better.

5. *Bogg*, or *Moss Earth:* this contains a vitriolic salt, which is too acid for plants.

6. *Chalk:* this is dry, hard, and brittle: notwithstanding a few plants can thrive in it, and

7. *Scabrous*, or *Stony Earth.* The smoothest stones, however bare of earth, are at least covered with moss,

which is a mere vegetable production: and birch is known to grow between stones, and in the clefts of rocks, and grows also to a considerable height.

The Creator has most wisely arranged these different kinds of earths, of which the *strata* are composed. For, to mention only the principal advantages which result from them; these different layers of sand, gravel, and light earth, give an easy passage to fresh water, which is filtered in passing through these different beds, becomes soft, and is afterwards distributed on all hands for the supply of men and animals. These *strata* are also the reservoirs and canals of springs and fountains. And it is remarkable, that such canals are found in every country over the whole globe: and that they are in general composed of light earth. If it be sometimes mixed with a more harsh and gravelly soil, the water is consequently still better purified. This variety of soils is of great utility in the vegetable kingdom: for it is owing to this that herbs, plants, and trees, grow of themselves in certain countries; while in others they cannot be produced without the assistance of art. All that art can do is to imitate nature; which prepares and proportions to plants which grow of themselves, the soil, nutritious juices, and warmth which are necessary to their vegetation. This same variety of soils is the cause why certain herbs, roots, and trees have their internal structure different from those of the same species which grow on other soils. It often happens, that some plants thrive, while others languish in the same soil. The same fruits have a different flavour in some countries,

from what they have in others. Plants whose roots are weak, small, and delicate, and which have but little sap, should be sown and planted in a sandy, light soil, that the roots may extend themselves without meeting with too much resistance; a soil into which the rain may easily penetrate, and where the roots may not meet with too many saline, acid or oleaginous particles.

It is asserted, that in the space of forty-eight hours, lettuce, cauliflower, sallads, &c. may be produced fit to eat, if the seed be first steeped in brandy, and the ground in which they are sowed mixed with pigeons' dung and powder of slacked lime. A proper preparation of the soil is indispensably necessary for vegetation.

What has been said should induce us to acknowledge with what wisdom the Creator has disposed each soil for the production of plants, and for the benefit of his creatures. It would therefore be very unjust to complain of the sterility of such and such soils: for the Creator has ever taken care that the different countries which he has assigned for the residence of man, should produce every thing necessary for his subsistence. If there be any soils which appear less fertile than others, the Creator has compensated that defect by greater advantages; or he has given the inhabitants of such places greater skill and ability for labour.

OCTOBER XII.

WINE.

WINE is a gift of the Divine Goodness; and should excite our admiration and gratitude. It might have been thought sufficient that God had given us bread and other aliments necessary for our support, in abundance: but he has not confined himself to this; he has provided also for our comfort and pleasure: therefore to render our lives still more comfortable, and to confirm and preserve our health, he has created the vine.

Other beverages, whether natural or artificial, do not produce these effects in the same degree. Wine alone has the power of banishing sadness, and of inspiring that cheerfulness which is equally necessary to the wellbeing of our bodies and minds. Its spirituous parts speedily recruit our exhausted strength. Bread strengthens man for labour, but wine enables him to act with *courage*, and renders his labour pleasant. Spirituous liquors produced by art, cannot diffuse over the countenance that air of cheerfulness which wine gives it. And here let us reflect on God, who has communicated to this salutary juice qualities so superior to the baseness of its origin, and the sterility of its native soil. The Creator has produced these effects by the mixture of oily, saline, and volatile particles; of which all wines are composed.

But how greatly is the Divine goodness manifested in the abundance and variety of wines. Their different kinds are innumerable. They vary in colour, smell,

taste, quality, and duration. We might almost say that there are nearly as many different kinds of wine, as there are soils; for the Creator has assigned to each country, such wines as are best adapted to the climate, the constitution, and mode of life of the inhabitants.

But how blameably have men acted in reference to the use of wine! There have been some legislators, who have severely prohibited the use of it; and this not by considerations drawn from the health and manners of the people, but for false reasons of œconomy and sometimes merely from fanaticism. It is at least certain, that to these causes united we must attribute Mohammed's prohibition of this liquor. This objection to wine is the more unreasonable, as the greater part of the people who prohibit the use of the liquor, permit the eating of grapes.

Another fault of which men are guilty is, the *adulteration* of wines; especially that which is made by *lime, whitelead, litharge,* and other noxious ingredients. In this the human heart discovers itself in all its deformity and sinfulness: can there be any thing much more detestable? A poor sick man, endeavours to assauge his sufferings, and recruit his exhausted strength by a little wine, which he purchases by a part of his scanty earnings: and they who adulterate this article have the barbarity to increase his sufferings, and render him more miserable, by presenting him with a poisoned cup, from which the unfortunate person drinks death instead of the life and strength he expected! But a still more shameful and deplorable abuse of it is, that some men, by an im-

moderate use of it poison themselves. This liquor is a wholesome remedy: it supports animal life, and contains vital spirits which warm and animate the humours, and increase and establish the strength. But its continual and excessive use prevents all these good effects. Thus used, it is to the human body what so much manure is to the garden; it hastens the fruit, but destroys the tree. A wise gardener will not continually manure and enrich his ground; he does this only in proper measures, and in proper times. He manures the trees when it is necessary, and gives them that portion only which their wants and nature require. This is the proper regimen for wine: he who does not attend to it will ruin both his body and soul.

Let us profit by these counsels, and never use wine without reflection; nor, for the mere pleasure of drinking. Let us ever remember, that without the Divine blessing, the most necessary aliments would fail: that it is our heavenly Father, who gives this wholesome fluid to strengthen and refresh us; and that without his blessing, wine itself would become a poison and a principle of death. We should seriously attend to these things, and think on the account we must give to God for the use we have made of the aliments which his Divine goodness has granted us: we should therefore take care that we abuse none of them; but make such a moderate use of wine, and every other blessing, that our health may not be injured, nor our understanding disturbed; that we may never be found incapable of performing the duties

which Christianity, and our secular business, require of us. We shall not then seek our happiness in wine; but, on the contrary, rather abstain from it, or any other gratification at particular seasons, that we may save something for the poor and the distressed. Thus the aliments which God condescends to give us, will excite our gratitude and love more and more to the Dispenser of all good: we should use them only that we may be the more fit to serve God with zeal and fervour; and fill up the duties of our respective callings. And we should remember particularly that these Divine gifts, however excellent, are the least of those which God's grace is unceasingly dispensing: and that blessings and pleasures infinitely more perfect, are reserved for the righteous in the world to come.

OCTOBER XIII.

THE MIGRATION OF BIRDS.

THIS is the time when most of those birds, which in summer found habitations and food in our fields, gardens, and forests, are about to leave our climate and pass into other countries. Very few spend the winter with us: the *yellowhammer*, the *chaffinch*, the *crow*, the *raven*, the *sparrow*, the *wren*, the *partridge*, the *robin*, and the *fieldfare*, are the principal. Most of the rest hide themselves, or leave us entirely. This migration is wonderful in every point of view:

if then we have not sufficiently considered these creatures during their stay with us, we should at least pay some attention to them now, when taking their leave. Perhaps this may lead us to consider them more particularly when they return in the spring.

Some kinds of birds, without taking any high flight, or setting off in troops, draw gradually towards the South, to seek those seeds and fruits which they like best; but they speedily return. Others, which are termed *birds of passage*, collect at certain seasons, and fly off in large flocks to other climates. Some others are content to pass from one country to another at certain times, attracted by the air and food. Others pass the seas, and undertake voyages of a surprising length. The best known birds of passage are, the *quail*, the *swallow*, the *wild-duck*, the *plover*, the *snipe*, and the *crane*, with some others, which live on worms. In spring the *cranes* pass from Africa into Europe, in order to enjoy a moderate warmth. They come in flocks often like clouds: and sometimes being nearly spent, they alight on vessels, and are taken without any difficulty. Swallows act in a different way: many cross the seas, and many continue in Europe, and hide themselves in holes of the earth, or in marshes, fastening themselves together, claw against claw, and beak against beak. They pile themselves in heaps in such places as are unfrequented by men and beasts. *Wild-ducks*, and *cranes* also go at the approach of winter to seek milder climates. They all assemble on a certain day, and set off in a flock. They commonly arrange themselves in two lines, united in

one point like a *wedge*, or an inverted Λ, with a bird at the head, and others following in the two lines, more and more extended. The *duck* or *crane*, which forms the point, cuts the air, and renders the passage easier to those that follow, whose beaks always rest on the tails of those before. The leader is charged with this commission only for a time: he passes from the head to the tail, rests himself, and is replaced by another. But all birds of passage do not go in flocks: there are some which travel alone; others with their females and young; and others in small flocks. They perform their journey in a very short time. It has been computed that they may easily go 200 miles in six hours each day, supposing they can take rest at intervals, or during the night. According to this calculation, they may pass from our climates to the Equinoctial Line in seven or eight days! This conjecture has been verified, as swallows have been seen on the coasts of Senegal on the 9th of October: i. e. eight or nine days after they left Europe.

These migrations cannot be too much admired. Doubtless the difference of heat and cold, and want of food, warns them to change their abode. But how comes it, when the air is so mild, that they might still remain with us, and their food is still found in sufficient quantity, that they never fail to set off at the appointed time? How do they know that they shall find in other climates the necessary food and warmth? How is it that they all take their departure from us at the same time, as if they had beforehand unanimously fixed the day of their journey? How can they, not-

withstanding the darkness of the nights, and their ignorance of the road, and the countries to which they go, still hold on a direct course? These, and other questions on this interesting subject, are very embarrassing; and hitherto have received no satisfactory answer; probably because we do not sufficiently know the instinct and nature of those creatures. However, we must acknowledge the kind direction of Providence in these migrations. What wonderful means does Providence use to feed and preserve certain classes of birds! With what tender care does he provide for their subsistence, when it fails them in some countries! Let us learn from this, that all in the great empire of nature is arranged with the utmost wisdom. Is not instinct the same to birds of passage, as reason is to man? And does it not teach them, what reason, if they had it, would dictate, viz. to change their habitations in proper time?

How much ashamed should we be of our unbelief, of our distrust and perplexities, when we reflect on these admirable directions of Providence! These voyages of the birds should instruct us in our duty. How is it that we so often abandom ourselves to discouragement, anxious cares and fears! Will not that God who so guides the fowls of the air, lead us with equal tenderness, whom he has endued with reason? Can man, the king of animals, be less an object of the tender care of God than they? The whole earth is the Lord's; and should we be found in any country where we cannot fulfil the counsel of God, his beneficent hand can conduct us to such places as shall be more suitable to

TAYLOR INSTITUTION UNIVERSITY OF

us. Let us, therefore, follow his merciful directions with confidence and joy.

"I will walk with God my leader, nor will I choose a crooked path; but take that which he marks out for me. He wills my happiness, and I cannot be miserable while led by my kind Father. I will therefore follow him step for step with a filial confidence."

OCTOBER XIV.

VARIETY OF TREES.

THE same diversity may be observed among trees, as is seen in other parts of the vegetable kingdom. Some, as the *oak*, are distinguished by their strength and hardness. Others are tall and slender, as the *elm* and *fir*. There are others, as the *thorn* and *box-tree*, which never arrive to a considerable height. Some are knotty and have rough bark, while others are smooth and beautiful, as the *maple*, the *poplar*, and *birch*. Some are used in those precious works which adorn the apartments of the rich and great: while others are employed for the most common and necessary purposes. Some are so slight and weak, that a little wind overthrows them: others are firm and resist the violence of *the northern blasts*. We see some that grow to an extraordinary height and thickness: and each year for a century past, seems to have added something to their size. Others require but a few years to come to their full growth.

Pliny admired in his time, trees, out of whose bark boats were constructed capable of holding 30 men! But what would he have said of those trees of *Congo*, which may be hollowed out into boats capable of holding 200 persons! Or of those trees which, according to accounts of travellers, are *eleven* feet in diameter; and on which they can carry a load of *four* or *five hundred* quintals, or upwards of 50,000lbs. weight? There is one of this kind in *Malabar*, which we are informed is 50 feet in circumference! The *cocoa-tree* which is a species of *palm*, is of this kind; some of them have *leaves* broad enough to cover 20 persons. The *tallipot*, a tree which grows in the *island of Ceylon*, and in height resembles the mast of a ship, is also celebrated for its leaves: they are said to be so large as easily to cover 15 or 20 men from the rain! They are so pliant when dry that they may be folded up like a fan: in this state they are extremely light, and not thicker than a man's arm. Twenty-three old *cedars* still remain on *Mount Lebanon*, which some think have escaped the ravages of the deluge: if this be so, they must be the strongest trees in the world. A learned man who has seen them assures us, that *ten* men cannot fathom one of them. They must therefore be 30 or 36 feet in circumference, which seems even too little for trees which are supposed to have lasted nearly six thousand years. The *gum-trees*, which are found in the American islands, are ordinarily 26 feet in circumference.

It is not likely that these *cedars of Lebanon* are as old as has been reported: although it is well known

that some trees live to a very great age. There are *apple-trees* which are certainly not less than a thousand years old! And if we compute the quantity of fruit which such a tree bears annually, we must (as has been noticed elsewhere) be astonished at the prodigious fecundity of a single *pippin;* which would have been sufficient to have furnished all *Europe* with trees and fruits of this sort!

This great variety among trees should remind us of the difference we observe among men, relative to their occupations in life, their modes of thinking, their talents, and the service they perform. As there is not one well-grown tree in the forest which may not be of some use to its owner; so there is no member of society but may be useful in his particular profession. One, like the oak, is remarkable for his firmness and unshaken constancy, which nothing can move. Another has not so much strength as the former, but he has more complaisance and address; he becomes all things to all men; is as flexible as an osier, and bends with every breath. If he be an upright man, he will comply only in things innocent and lawful: but if he be indifferent about God, his duty, and religion, he will always take the strongest side.

However different trees may be from each other, they all belong to the Ruler of the Universe; all are nourished by the same earth; all are vivified by the same rain, and warmed by the same sun. Would to God! that all men, whatever diversity there might be among them, would unite to acknowledge that they are all equally the creatures of God; equally subject to

his power; equally the objects of his tenderest cares; that they owe their being and support to him; and have received from his hands the various talents with which they are enriched! The cedar which rears its majestic head on the top of Lebanon, and the bramble which creeps at his feet, are both nourished by the juices of the earth, and the rains of heaven. Thus the Divine blessing is equally necessary to the rich and the poor. The *most eminent* and *most powerful* among men, should ever remember, that they owe their elevation and grandeur to God; that they are supported by him alone; and that in a moment he can root them up, overturn, and reduce them to dust.

This consideration will help to repress every motion of pride which may rise in their hearts, and inspire them with that submission and obedience which they owe to the Author of their being.

OCTOBER XV.

TEMPERATURE OF THE WEATHER IN DIFFERENT REGIONS OF THE EARTH.

It seems that the state and warmth of countries should be regulated according to their relative position to the sun; as that planet casts his rays in the same way on all countries which are in the same degree of latitude. But experience teaches us, that heat and cold, and temperature in general, depend on many other circumstances. The seasons may be very differ-

ent in places under the same parallel: and on the contrary, are often very much alike in very different climates. As therefore accidental causes may make the heat very different in the same latitude; and since it is very far from being always such as the distance of the sun seems to require; it is difficult to determine exactly the seasons and temperature of any country.

The vicinity of the sea causes a milder climate. England, and the coasts of Norway, are indubitable proofs of this. The sea may be frozen near the shore, because it is there mixed with a good deal of fresh water; but this does not take place at any considerable distance from the land; partly because of the salt which is diffused through the sea; and partly because of its continual agitation. Thus the cold at sea never comes to the freezing point; during the winter the adjacent countries benefit by it, the temperature of the weather being much milder. On the contrary, the more a place is elevated above the surface of the water, the greater the cold is. The air is not only more thin, and consequently less warm; but the greater part of the heat which is produced by the earth's reflecting the sun's rays, does not take place on high lands, but remains in low places and vallies, where the warmth is always greatest. Besides, if there be, as some think, a subterraneau central fire, the higher lands are at the greatest distance from it. *Quito* is almost under the Line; but it's elevation causes the heat to be more moderate. However such countries have always a serene and light air, and the temperature is pretty equal. High mountains attract the clouds, hence rains and

tempests are more frequent in hilly countries than elsewhere. And we know that it scarcely ever rains in the plains of Arabia. Countries where there are great and extensive forests are very cold: the ice in such places melts more slowly in winter, because the ground is covered with the shade of the trees. This ice cools the superior air, and this fresh cold prevents the thaw.

What also moderates the heat in warm climates is, that the days there are not very long: and the sun does not continue long above the horizon. In colder countries the days are very long, and this is the reason why the warmth is greater in these places than might be expected. The serenity of the sky, the clear light of the moon, and the long twilights, render the long nights more supportable. Under the *Torrid Zone* the seasons are not distinguished so much by winter and summer, as by *dry* and *wet* weather: for when it ought to be summer, or when the sun rises most above the horizon, and the rays fall in the most direct manner possible, then the rains commence, and continue for a longer or shorter time. But in those countries the most pleasant season is when the sun has the least elevation. In the countries beyond the Tropics, the weather is more uncertain than within the Tropics. In spring and autumn the winds prevail most. In winter the earth freezes to a greater or less depth, but scarcely ever beyond three feet in our climate. In the more northerly countries it freezes much deeper in winter, and thaws but a few feet in summer. The ponds, lakes, and even the rivers are covered with

ice; first near the shore, and afterwards over the whole surface. The different quality of soils, and the property they have of retaining less or more of that heat they have acquired, contribute something to the difference of climates.

In all these arrangements we may discover such wisdom and goodness as we cannot sufficiently admire. In regulating the temperature and seasons of different countries thus, the Creator has rendered every part of the earth habitable by men and other animals. We often form false ideas concerning the *Torrid* and *Frigid Zones;* and foolishly imagine that the inhabitants of those regions must be the most wretched creatures in the universe. Happily for the world, and for the great satisfaction of all feeling hearts, it is certain that the people of the most distant countries, not excepting even those under the *Line,* or near the *North Pole,* enjoy a portion of happiness suited to their nature and destination. Every country has its advantages and disadvantages, which so counterbalance each other, that, laying prejudice aside, it would be difficult to determine which of these countries deserves the preference. There is no corner of the earth, in which the goodness of God is not manifested. "From our climates to the most distant Zones, all is full of the goodness of the Lord. All the inhabitants of the globe experience his paternal kindness. Not one of his creatures is forgotten. All that breathe derive life, nourishment, happiness, and joy from him."

OCTOBER XVI.

THE ATMOSPHERE OF THE EARTH.

The air, by which the earth is encompassed, is neither so pure, nor so subtile as the ether; being impregnated with a multitude of particles or exhalations, which are continually detached from the earth, and especially from the waters. This is called the atmosphere. Its lower region, or what is next the earth, is pressed by the superior air, and consequently is more dense. This is sufficiently evident to persons who ascend high mountains, their respiration becomes more difficult in proportion as they ascend. But it is not possible to determine the exact height of the atmosphere; for men cannot ascend very high in it. Neither can we infer with certainty, from the duration of twilight, how far the mass of air extends. For granting that the morning twilight begins, and that of the evening ends, when the sun is eighteen degrees below the horizon; and that the latter is produced by the rays which strike the earth, and are reflected by the highest parts of the atmosphere, still there would remain many difficulties to be cleared up. However this may be, the atmosphere is generally divided into *three* regions. The lower region extends from the earth to the place where the air is no longer heated by the rays which the earth reflects. This region is the warmest. The *middle* region begins where the preceding one ends, and goes to the summit of the highest mountains, or even the highest clouds; this is the space where rain, hail, and snow are engendered. This region is much

colder than the preceding, as it is not heated by the rays of the sun which pass through it in a perpendicular line. But the *third* region is yet colder: it extends from the *middle* region to the utmost height of the atmosphere; but its limits cannot be exactly ascertained.

The particles which ascend from the earth into the atmosphere, are of different sorts: some aqueous, some metallic, some sulphureous, &c. Now as some of these abound more in one place than in another, hence the great variety in the air, which is very sensible even at a moderate height. A heavy air is more favourable to health than a light one, because it promotes the circulation of the blood, and insensible perspiration. When the air is heavy, it is generally clear; whereas a light air is generally accompanied with clouds, rain, or snow, which render it damp. Exhalations increase the weight of the air, and particularly when the heat causes them to ascend to a great height. The air continues light, notwithstanding the aqueous vapours with which it is filled.

Too great a dryness of the air is very injurious to the human body: but this seldom happens for any length of time, except in sandy countries. A damp air is very unwholesome, because it relaxes the fibres, obstructs insensible perspiration, and if heat accompany the dampness, it disposes the humours to putrify. An air too hot dilates all the fluids of the body, and occasions sweatings, which bring on weakness and oppression. On the other hand, when the air is too cold, the solid parts contract excessively, and the fluids are condensed;

hence result obstructions and inflammations. The best air is that which is neither too heavy nor too light, too moist nor too dry, and which is not impregnated with noxious vapours.

It is in the atmosphere that clouds, rain, snow, dew, lightning, and many other ærial phenomena are engendered. It is to the atmosphere that we owe our morning and evening twilight! as the rays of light are refracted and reflected, and bent in different directions in this mass of air; we see them before the sun rises, and enjoy them some time after he is set. Hence it is that the people under the polar circles enjoy some rays of light, even while the sun is for a long time below their horizon.

The atmosphere is the habitation of the winds, which have such influence on the fertility of the earth, and the health of men. Cities and provinces would be speedily deprived of their inhabitants, and changed into dreary deserts, were the air never to be agitated. The whole world would become one charnel-house, if there were not frequent storms and tempests to purify the air, and disperse those noxious vapours and exhalations, the bane of men and beasts, which are continually floating in the atmosphere.

What reasons have we to bless the Creator for this advantageous arrangement of nature? Were there no atmosphere, or were it different from what it is, our earth would be a chaos, a most wretched abode for its different inhabitants. Let us acknowledge with gratitude the gracious wisdom of our Creator, who has regulated every thing in nature, so as to promote the

happiness of all the beings he has formed. We should always remember, that every advantage we derive from the atmosphere comes from that God who is the dispenser of all the blessings of nature. A proper consideration of the benefits which we receive from God, cannot fail to excite every emotion of piety and gratitude. Let us love our Creator with our whole souls, and devote ourselves entirely to him.

OCTOBER XVII.

ANNUAL PROPORTION BETWEEN BIRTHS AND DEATHS.

THAT God has not abandoned the life of man, and the preservation of the human race to blind chance, but watches over us with paternal care, evidently appears from the exact proportion in which (in every nation of the world, and in all times) men come into life, and depart from it. By means of this equilibrium, the earth is neither too thinly peopled, nor overstocked with inhabitants. Yet the number of those who are born is generally greater than those who die: for we find that twelve or thirteen persons are born annually for ten that die. Thus the human race is continually multiplying. Were not this the case, and were the number of deaths greater than the number of births; in a few ages a whole country would be depopulated; particularly as various accidents may injure population. The principal hindrances to population

are pestilence, war, famine, celibacy, and confinement in cities; especially those which are very populous, for in such nearly as many die as are born.

Baptismal registers shew us, that *more males than females are born.* The proportion is nearly twenty-one to twenty. So that where 1050 males are born, there are only 1000 females. But death, the military life, and divers accidents, restore the balance between the two sexes. In cities there are generally more women than men: in the country the case is reversed.

The number of children, relative to that of families, is also regulated with great wisdom. It is computed that in *sixty-six* families there are only about *ten* children baptized annually. In a populous country, out of fifty, or *fifty-four* persons, only one marries each year; and each marriage, one with another, produces *four* children; but in cities, only *twenty-five* children are reckoned to *ten* marriages. Men capable of bearing arms, make the *fourth* part, ordinarily, of the inhabitants of a country.

By comparing the bills of mortality of different countries, it is found, that in common years, i. e. in such years as there is no epidemic disorder, there dies,

1 out of 40 in villages.
1 out of 32 in small towns.
1 out of 28 in middling towns.
1 out of 24 in very populous cities: and
1 out of 36 in a whole province.

Out of each *thousand* 28 die annuallly. Out of 100 children who die each year, there are always three dead born, but there is scarcely *one* out of 200 that

dies in the birth. Out of 115 women that die, only *one* dies in childbed; and but *one* out of 400 dies in *labour*. The greatest mortality among children is in the *first* year. Out of 1000 about 293 die before they are one year old. Between the *first* and *second* year, only 80 die out of 1000. But from the 13th to the 14th or 15th years, the number is so small that it scarcely ever amounts to above *two* in a *thousand*. This therefore is the time of life in which there is the least danger. Some learned men have observed, that there are more women than men who live from 70 to 90 years; but that there are more men than women who exceed 90 and live to 100.

Three thousand millions of persons at least may live at one time on the earth; but there is scarcely one *third* of that number, or at the most 1080 millions, viz. about 650 millions in *Asia*, 150 millions in *Africa*, 150 millions in *America*, and 130 millions in *Europe*.

The most natural inference to be drawn from this is, that God is most tenderly concerned for the life of man, and that it is precious in his sight. Is it possible that such proportion could exist between *births* and *deaths;* and that this should be so regular and so constant at all times, and in all places, if the wisdom of God had not established, and his providence maintained it?

OCTOBER XVIII.

DEVASTATIONS IN THE KINGDOM OF NATURE.

We now behold beauteous nature, which in spring ravished all our senses, and afforded us such diversified pleasures, subjected to the common law of all created things. Its beauty has disappeared, and every day brings about new revolutions; and each succeeding one more disasterous than the other. But such is the lot of nature, it contains in itself the sources of the most afflicting devastations.

How much mischief is occasioned by the overflowing of seas and rivers, heavy rains, and the melting of snow and ice! Whole villages drowned, fruit-trees torn up by the roots, crops of corn, &c. laid under water, whole herds carried away, present to our view fearful monuments of the destructive power of the elements.

A shipwreck appears a less fatal disaster; but a whole commonwealth might have been formed by those men whom the sea has in this instance swallowed up. Immense sums, which probably whole ages were employed in collecting, lost in a moment. Whole families are ruined by a shipwreck; the appearance of the stormy sea, the lamentable cries of the dying, the crash of the vessel which is wrecked—what terror must all these things inspire!

What calamities also proceed from excessive heat, and a long drought! Grass and plants languish, the ground is dried up, and we are nearly stifled with clouds of burning dust. The waters grow gradually

corrupt, and become a deadly drink for the flocks. Heat and putrefaction multiply insects prodigiously: and they lay waste all before them:—they devour the country, and if they die to-day, they appear again to-morrow in new generations. Famine, the horrible companion of death, comes next; and the pestilence walks by its side! One bad year, a war, or a contagious disorder may occasion all these evils.

What confusion and desolation are produced by earthquakes, which become more and more common! Even in the very bowels of the earth, a destroying fire causes pestilential vapours to boil up; which spread death in all directions. Suddenly, and often in the dead of night, the earth bellows and shakes:—whole cities are overturned, and thousands of criminals swallowed up! With what a formidable aspect do volcanos appear! They are the emblems and forerunners of the devouring flames of the great and last day! Here we behold nature, in other respects so lovely, in a terrible point of view. At this awful spectacle we can scarcely refrain from saying, How imperfect and defective is every thing, except the Creator himself! Many people make *nature* their *god*, and its beauties cause them to forget that Supreme being, from whom these beauties spring. Let us learn the true state of all earthly things; and acknowledge the advantages which the love of God has beyond every thing to which our hearts can be attached. To feel delight in the contemplation of the august attributes of God, to be made partakers of his grace, to feel that he is our sovereign good, is to triumph over all the desolations of nature.

Besides, what can be more proper to increase our love and gratitude to him than the recollection, that he well knows how to make all these calamities work together for our good?

These apparent disorders in nature, prevent evils incomparably greater, which would not fail to take place if destructive matter, fire, and subterraneous vapours continued to be heaped and pent up in the bowels of the earth. Volcanos and inundations preserve us often from greater calamities. Burning heats serve to dry that ground which in other places had been laid under water. Plague and famine free the world from a multitude of its vicious inhabitants, under which it groans. The extraordinary mortality which sometimes prevails among men, is a very wise mean of maintaining the proper balance in respect to number, and of preventing an excessive population. Nevertheless we may grant that God would employ fewer scourges on the earth, if his holiness and justice did not oblige him thus to punish, from time to time, the crimes of those who inhabit it.

When we are mere spectators of the devastations which sometimes happen here below, and are not immediately interested in them, it is very right that our gratitude to the Supreme Being, who has preserved *us*, should be accompanied with sentiments of compassion and charity for our suffering fellow-creatures. Let us never be insensible to the misfortune of others, nor hear with indifference the recital of the calamities of people the most remote; as if nothing should affect us but that in which we had a personal concern. In the

immense chain of terrestrial events, there is not a single link, however distant, with which we have not some connection. Were the wretched people who suffered so many distresses greater sinners than *we* are? Why are *they* fallen while *we* stand upright? Are the places we inhabit less defiled with iniquity than those where earthquakes and volcanos have made such ravages?—The last catastrophe of nature will be still more terrible to us. The world is not eternal: after having experienced excessive calamities of every kind, its utter destruction shall at last arrive. Nature still flourishes, but she visibly grows old. It is only by the dint of industry and labour that we derive from the earth what is spontaneously presented to our forefathers, and what they collected almost without trouble. Let this earth of our pilgrimage perish, seeing it must perish! Here we have no permanent city: may we know and seek that city which is above, whose Founder and Builder is the living God!

We should lament over those countries, towns, and villages, which are laid waste: we should be ready to succour them, and divide our bread with the wretched inhabitants. O that they may humble themselves under the mighty hand of God, and patiently suffer the ills which he sends them! Let them recollect that many of their brethren have suffered similar distresses; they were in misery, but their wounds are now healed, their granaries are now better supplied than they ever were, and their burnt houses are changed into palaces. To create and destroy is the work of God; and will continue to be so till the end of time. If he never

destroyed, we should never see any new creations; we should have no occasion for acts of resignation and patience: we should not sufficiently know the value of that religion which now confirms and comforts us; and raises us above all afflictions and distresses. Here we have firm footing; and let this be the result of all our reflections: God saw all that he made, and behold it was very good. "Yes, Lord, thou art clothed with Splendor and Majesty: thy judgments are holy and just; all thy works are full of grace and truth. Who would not acknowledge thy power and wisdom, and bless thee with transports of joy, thou Lord of the universe!"

OCTOBER XIX.

THE CIRCULATION OF THE BLOOD.

The circulation of the blood is the most mysterious and important of all the motions performed in or by the animal body. In this circulation we observe a certain grandeur which strikes the mind, and makes us feel the limits of the human understanding; and inspires us with a profound veneration for the Supreme Wisdom of our Divine Creator.

The blood circulates continually in our bodies, and this is the principle of its motion. The heart, which is situated within the breast between the two lobes of the lungs, is a fleshy substance, which has two cavities, separated from each other by a partition. This

machine is in continual motion by alternate contraction and dilatation. The trunk of an artery, which is called the *Aorta*, or great artery, proceeds from the left ventricle of the heart. It soon divides itself into many branches, some of which ascends, others descend by innumerable ramifications, which become smaller and smaller, in proportion to their distance from the heart; distribute themselves on all hands, and penetrate every part of the body. When the right ventrical contracts it propels the blood into the arteries with so much force, that it goes into the very extremities of their smallest ramifications. This motion is called the *Pulse*; it is only the effect of the pulsation of the heart, and is quicker or slower according as the heart contracts with more or less frequency. But what becomes of the blood after it has arrived at the extremities of the arteries, distributed through the body? Nature employs it in the wisest manner. Certain vessels through which the blood circulates, absorb the aqueous particles; others the oily, and others the saline. In other parts of the body, where the arteries are dispersed, the milk or fat are secreted; or other humours which are necessary for certain purposes, or which should be expelled from the body as useless.

That part of the blood which remains after having been thus purified, runs into the extremities of the arteries in such a way, that with the help of a microscope the little red globules may be seen rolling one after another. But these small channels begin to grow gradually larger, forming vessels which still increase in wideness, and are termed *Veins;* by these

the blood is carried back into the heart in the same way that it had been conveyed from it by the arteries. The veins therefore bring back the blood to the heart, from all parts of the body, the lower as well as the upper, by a canal which opens into the right ventricle. It does not pass immediately from this into the left ventricle; but the contraction of the heart drives it into the pulmonary artery, which disperses it through the lungs by an infinite number of small branches. Here the blood which has circulated through all the body, and has acquired a certain degree of warmth by its agitation, must, before it recommences its circulation, be cooled by the fresh air, which is brought into the lungs by inspiration. By means of this cooling it condenses again, for during the circulation it was extremely dilated by the heat. It is now received by the pulmonary veins, which conduct it to the left auricle of the heart: this restores it to the left ventricle, which by its contracting drives it again into the *aorta*, which distributes it to all parts of the body. Thus the blood circulates, passing from the heart to the extremities of the body, by the *arteries;* and returning from the extremities to the heart by the *veins.**

Such is the admirable mechanism of the circulation of the blood in men and animals. But how many obscurities still remain on this subject! We meet with wonders here which prove to us that the human mind

* How the blood acquires and preserves its motion; what is the quantity of its circulating power, and what the cause of its colour, are questions not yet satisfactorily answered. *A. C.*

cannot fully comprehend this masterpiece of Divine wisdom. For instance: is it not astonishing that the motion of the heart should continue without interruption for 70, 80, or 100 years; and the machine neither wear out, nor fall to pieces? The blood circulates in the human body 24 times every hour: and consequently goes through the whole body 576 times every 24 hours; and as at each contraction the heart propels two ounces of blood into the aorta, it is evident that 7200 ounces, that is 600 pounds of blood, pass through the heart in the space of one hour!

May not this alone strike us with astonishment? But there may be many other wonderful circumstances in this circulation which we know not; or of which we have very imperfect ideas. In a word, "man, "whose government is acknowledged by all things "here below, is a composition of wonders. The most "admirable mechanism, and the greatest corporeal "beauty are united in him. Each of his members "proclaims him Lord of the creation. An innumer- "able multitude of invisible canals, so formed and "measured as infinitely to surpass the wisdom and "contrivance of man, conduct and distribute in every "direction, that precious fluid on which our life de- "pends, and cause it to circulate regularly and with- "out interruption. In this universal movement, in "this continual flux and reflux, all is regular and "well ordered: every thing is in its place, and in the "most perfect harmony: nothing is discordant, no- "thing obstructs, nothing stops, nothing precipitates "its course."

Circulation of the Blood.

This admirable circulation, which takes place in all animals, exists also in every part of nature. The sun revolves round his axis, and the earth, moon, and other planets perform their appointed revolutions with a regular and determined motion. Not only the air is in a continual motion, (for it incessantly circulates around the earth,) but the water also continues its course without interruption. The rivers fall into the sea, and from the vast surface of the ocean those vapours arise which form the clouds: these are precipitated in showers, which penetrate the mountains and form springs; which increasing, insensibly form rivers, and these returning to the ocean, restore what had been taken away by evaporation. The earth ever fruitful, produces annual plants and crops; yet is never exhausted, because the continual circulation of nutritious juices repairs its losses, and restores to it what it had given to us.

All these revolutions of nature lead us to a *First Cause;* who has so planned the world that all beings are continually in action: they circulate, act, and move in an insensible labyrinth of changes, till they return to their former place, and commence anew the race marked out for them.

OCTOBER XX.

PROPORTIONS OF THE DIFFERENT PARTS OF THE HUMAN BODY.

GOD has formed the human body according to the wisest rules, and established most exact proportions even in the smallest parts. To be convinced of this we have only to calculate the height and thickness of the body according to certain specified measures. The height of the body is generally divided into 10 equal parts, which in technical terms are called *Face-lengths* or *Faces;* because a man's *face* was the first model for these admeasurements.

The first *face* takes in the whole of the visage from the root of the hair on the forehead to the tip of the chin. From the beginning of the hair on the forehead to the top of the head, there is one third of the *face* in height; or what amounts to the same thing, a length equal to that of the *nose:* therefore from the top of the head to the bottom of the chin, the length is *one face* and a *third.* Between the bottom of the chin and the hollow of the collar-bone, there are two thirds of a *face:* thus the height from the collar-bone to the top of the head, is twice the length of the face; which is the fifth part of the whole length of the body. From the collar-bone to the bottom of the breast, one *face* is reckoned. Below the breasts the *fourth* face length begins, which ends at the navel. The *fifth* extends to the bottom of the abdomen; which make in the whole the half of the height of the body. The length of the thigh is equal to two faces, and the knee

to half the face. The leg, from the bottom of the knee to the *instep* makes two faces, amounting in the whole to nine faces and a half. From the *instep* to the sole of the foot there is half a face, which completes the ten faces, the measure into which the human body is divided.

This division has been made for men in general: but where persons are very tall, there is found half a face more in that part of the body which extends from the breasts to the bottom of the abdomen. It is the extra length in this place which makes what is called a genteel shape. When the arms are so extended as to form a straight horizontal line; the distance between the tops of the middle fingers of each hand, is equal to the height of the whole body. From the hollow of the collar-bone to the joint which unites the shoulder-bone to the arm, there is *one face-length.* When the arm hangs down it is computed at *four face-lengths:* two between the shoulder and the elbow, and two from the elbow to the first joint of the little finger; which make five faces for each arm, ten faces in the whole, which is a height equal to the length of the whole body. The hand is one face in length: the thumb the third of a face, or the length of the nose, which is also the length of the great toe. The length of the sole of the foot is equal to a sixth part of the height of the whole body. There is a particular measure also for the thickness of the body and limbs. The thickness of a finger is ordinarily the 36th part of the height: the thickness of the little finger the 48th part. Three times the thickness of the thumb, is

equal to the thickness of the hand: six times the thickness of the hand is equal to the whole height of the body.

The height of the human body varies considerably: the finest stature is from five feet four or five, to five feet eight or nine inches. The middle size is from five feet one inch, to five feet four. The least size is below five feet. In general, women are two or three inches shorter than men: their chest projects further, so that generally the capacity of the breast formed by the ribs is deeper and wider in women than in men, in proportion to the rest of the body. The loins of women are wider than those of men, because the bones which form that capacity which is called the *Pelvis*, or *Bason*, are larger than those of men. Man has more *brain* than any other animal of the same size. He has even more than the horse or the ox. A man who weighs a *hundred pounds* has commonly *four* pounds of *brain*. Infants born at the due time weigh *eight* pounds at most, and *five* at least: their greatest length is *one foot eleven inches*, and their least is *one foot six*.

The human body, whether it be considered in the whole, or in its different parts, is constructed according to the most exact proportions. All is regular, well proportioned, and in the greatest harmony; not only as it respects the size and figure, but the situation also of the different parts. There is not one part which is greater or less than the relation it bears to other members, and the general advantage of the whole machine require. It is impossible to devise a

form or situation for any part, which would be more convenient or beneficent to the whole of the members. It is granted however that there may be varieties and irregularities among them, which do not destroy the principal design of the body. Ill-shaped persons and monsters are proofs of these irregularities. But if certain disproportions in the size, form, and position of the parts may be compatible with the principal design, they still hurt the grace and beauty of the outward appearance. How great should the gratitude be of those persons who are well-shaped, and whose members are all in just and agreeable proportion? O that our souls were as pleasing in the sight of the Lord as our bodies are in the eyes of men! When shall our souls and bodies be in the same harmony which prevails among the members of a well-formed body? When this takes place we shall be pleasing in the sight of our God: and glorify our Father and Redeemer with our bodies and spirits which are his.

OCTOBER XXI.

OF NAVIGATION.

To a reflecting mind, navigation is a subject which may give rise to the most important reflections. Here our curiosity is excited, and at the same time satisfied in different ways so as to become a new source of pleasure. In general we consider navigation only in reference to the advantages it affords us; but we should

also consider the construction and motion of ships, without which navigation could not exist.

First, is it not very astonishing that such an enormous and heavy mass as a ship can float on the water? The weight of a ship is greater than we imagine; and it requires but little attention to be convinced that the pressure on the water must be prodigious. A *man of war* which carries 800 men, has commonly provisions laid in to support that number for three months, and carries besides from 70 to 100 guns. Now supposing each man to weigh only 100 pounds, and each cannon 900, (although there are cannons that weigh more than 40 hundred;) and supposing that each man eats but *three* pounds weight of food in the day, this moderate calculation will make the burden to amount to more than 386,000 pounds. But the weight of the vessel itself is not taken into this calculation; the rigging, and a multitude of materials necessary to keep the vessel in repair, load the cannon, &c. are articles which at least equal, if not surpass the preceding sum.

However this enormous mass of at least 772,000 pounds may be moved with a very gentle wind! Is not this inconceivable? Does it not appear contrary to the laws of nature? No. It is quite natural, and should the contrary happen it would be miraculous. It is not the wind that drives this mass: the ship with its whole burden *swims* on the water. But how can so heavy a body float? How can the water, whose particles are not strongly connected, have strength and consistency enough to support this enormous mass? It

is the effect of an equipoise; the ship sinks till the volume of water which it displaces be equal to it in bulk. Suppose a vessel to be 120 feet long, and 15 broad, and that it sinks two feet in the water, i. e. 3600 feet of water, or so much cargo, because the one takes place of the other. Thus the river is not more loaded with the ship and her cargo than it was with the water which the ship removes from the place which she occupies.

Formerly navigation was very dangerous, and more laborious than it is at present. People did not dare to venture themselves far out in the open sea, but coasted along without losing sight of the shore. But since the invention of the *compass* they cross the seas with more confidence and safety. Before this valuable discovery, it was a sort of wonder to make even short sea voyages. In *Homer*'s time it required great preparations and long deliberation before his heroes could determine to cross the Egean Sea. The expedition of *Jason* and his Argonauts to the *island of Colchis*, was considered as the wonder of the world. But what are these in comparison of *our* sea-voyages? By the discovery of the compass we are enabled to make such long voyages: the magnetic needle turning always to the North, informs the navigator in what region he is, and the countries to which he directs his course. In the darkest night, in the most cloudy days, in the very midst of the ocean, this instrument serves him as a guide, and leads him from one end of the earth to the other.

Have we ever reflected on the advantages of navigation? Have we ever been sufficiently grateful to our

Creator for these advantages? Whoever we may be, it is to navigation we owe, either directly or indirectly, a great part of the things necessary for our subsistence. We would not have those spices and medicines which come to us from different countries; or at least could not procure them but at great trouble and expence, did not vessels bring them into our ports. We should be much distressed indeed, were we obliged to bring all our necessaries by land. The following calculation will prove this. The freight of a ship is reckoned by *tons:* and a *ton* weighs 2000 pounds; therefore a vessel whose burden is 600 tons, carries 1,200,000 pounds weight! Now allowing 1000 pounds weight to a horse, it would require 312 four-horse waggons, i. e. 1248 horses, with a man at least to each waggon, to transport this cargo. But how could we procure treasures from other parts of the world? and how expensive would it be to acquire even the bare necessaries of life? Besides, should not navigation be considered as one of the greatest blessings of our Creator, when we reflect that it has been the means of carrying the knowledge of the gospel of Christ to the remotest nations of the world? Can this consideration fail to inspire us with the most lively emotions of gratitude to God? On the other hand, should we not thank him that *our* calling does not oblige us to brave the dangers of the seas, and expose our lives continually in order to enrich ourselves, or to procure even the means of a bare subsistence? Whilst then, at a distance from all these perils, we live peaceably among our families, should we not recommend those of our

brethren to the protection of God, who are obliged to brave the seas, and undertake long and dangerous voyages for the benefit of society, and consequently for our particular profit?

OCTOBER XXII.

BEASTS OF DRAUGHT AND BURDEN.

ANIMALS of this kind render us so many services, and are so very useful, that it would be a sort of ingratitude not to examine them with particular attention.—We generally content ourselves with subduing them for our food, or training them to assist our weakness by their strength; but through ignorance or indolence we neglect to consider them in their relation to the rest of the creation, and to reflect on the wisdom and goodness of God, which are so visibly manifested in the production of these useful animals. Possibly the following meditation may make us more attentive to this subject, and serve to excite our gratitude to the Creator.

Of all domestic animals the *horse* renders us most service, and does it the most willingly. He suffers himself to be employed in the cultivation of our grounds. He tamely submits to all kinds of labour for a moderate and frugal subsistence. He shares with men the pleasures of the chase and the dangers of war. He is a creature who gives up his own being to exist only by the will of another; he even anticipates this

will, and by the promptitude and precision of his motions expresses and executes it. He abandons himself unreservedly to his master; refuses no labour; exerts all his strength; goes beyond it, and sometimes even expires in his efforts to obey. Nature has given him a propensity both to love and fear man, and has rendered him very sensible of those caresses by which his servitude is rendered pleasing. The horse of all animals of his size is the best proportioned in every part of his body. Every thing in him is regular and elegant. The exact proportion of every part of his head gives him a light and lively look, which is considerably heightened by the beauty of his chest. His carriage is noble, his step majestic, and all the members of his body seem to announce energy, strength, courage, and stateliness.

The *ox* has not the gracefulness and elegance of the horse, his monstrous head, his limbs too small and too short for the size of his body; the smallness of his ears, his stupid look and heavy pace, may be considered as imperfections: but all these irregularities are compensated by the important services which he renders to man. He is strong enough to carry heavy burdens; and is contented with scanty fare. Every thing in this animal is of use; his blood, his hide, his hoofs, his flesh, his fat, and his horns, may be all applied to a variety of purposes: his very dung is the best sort of manure for enriching the land, that it may be capable of producing new aliments. The structure of the organs of digestion in this animal is very remarkable. He has *four* stomachs: the first of which can contain

forty or fifty pounds weight of food: the *third* stomach God has so constructed that it has eighty-eight folds, in order to assist digestion; whereas the stomachs of sheep and goats have but *thirty-six*.

The *ass*, however unpromising his outward appearance may be, and however despised, has nevertheless very excellent qualities, and is very useful to man. He is not fiery and impetuous like the horse, but peaceable, simple, and always well tempered. He has no stateliness, goes smoothly on his way, and carries his load without noise or grumbling. He is temperate both as to the quality and quantity of his food. He is contented with thistles, and the hardest and worst herbs. He is patient, vigorous, and indefatigable; and renders his master constant and important services.

How is it that we can have these animals daily in our employ, and not think at the same time of the Creator who has formed them, and given them those properties which are so useful to us.—It is a circumstance well worth the attention of a reflecting mind, that the number of *beasts of burden* and *draught cattle* is beyond all comparison greater than that of *wild beasts*. If the multiplication of the latter were equal to that of the former, the earth would soon be laid waste. Can we reflect without gratitude on the goodness of God, who has given us the dominion over these creatures; the strength or skill to subjugate them; the right to apply them to our use; to change their natural state at pleasure; to oblige them to obey, and employ them as we think good? This dominion over

the creatures is the gift of God, by which man may every moment perceive the excellence of his being. If God had not impressed animals with a natural fear of man, it would have been impossible for him to subjugate them by force. Seeing then that it is to God we owe the empire which we have over them, it is highly unjust to abuse these creatures, either by excessive labour, or by any other mode of ill-treatment.

OCTOBER XXIII.

WINTER SEED-TIME.

A GREAT part of the food designed for man and other animals, is at this time confided to the earth. When the husbandman has sown his winter's corn he begins to enjoy a little rest. He will soon have the satisfaction of seeing his fields clothed gradually with a beautiful verdure, giving the promise of a plentiful harvest. Nature indeed works in secret while the germ is unfolding itself; but its operations may be discovered by taking some of the seeds out of the ground which begin to sprout. Two days after the seed has been sown, the juices with which it is swollen penetrate the germ and cause it to shoot. The germ is always situated at one extremity of the seed; and that part which is next the outside is the little root of the future plant. Twenty-four hours after the corn has been sown, the germ commonly begins to pierce the coat of the grain, and to disengage itself. It puts

out its root and stalk; the root is at first wrapped up in a sheath which it bursts. Some days after other roots shoot out at the sides, each disengaging itself from its sheath. On the fifth or sixth day a small green point begins to appear above the ground. It continues a considerable time in this state, till in fine weather the ear bursts forth from its coat, by which it had been protected from cold and uncertain weather.

All this necessarily leads us to reflect on the nature of human life. Our present existence is the germ of an eternal life. We are here below in our seed-time, and can discover but very little growth. The full ear, the ripe fruit, and the sheaves in perfection we cannot see here below; the ingathering is not made on earth. —We live in hope. The husbandmen after having sown his field abandons his seed to corruption, to rain and storms, and to the heat of the sun: but he does not yet see what the result will be. This is precisely what happens in regard to the spiritual seed. Let us not be proud because the seed *is* sown; nor be discouraged because we do not immediately see the fruits. Let us continue to *sow unto the Spirit;* and possibly our good works, wrought thus in God, however trifling in themselves, will have blessed consequences hereafter.

Now that our seed is committed to the ground, let us wait without care and anxiety, till at the end of nine months we reap the fruit of our sowing: and in the mean time, like the pious husbandman, let us beseech God to crown our fields with his blessing.

OCTOBER XXIV.

GOD'S PARTICULAR PROVIDENCE.

It would be a great misfortune for me and for the world, were there any foundation for that principle of unbelievers, that God concerns himself only with the *totality* of *beings;* and takes care of whole *societies*, of all *genera* and *species;* but not of *individuals.* What a ridiculous god is that of the *Freethinkers!* Or rather does he deserve the name of a god, who either cannot, or will not concern himself with the *parts* of which the *whole* is composed. For our comfort we are taught both by reason and revelation, to believe in a God whose providence is extended to every creature in particular, and to every part of which each creature is composed.

Let none imagine that it is beneath God to attend to individuals. The whole universe, as well as the meanest particle of dust, is nothing in comparison of the Infinite Being. This being the case, what is it that we can call little or contemptible? Is there not a greater difference between an idividual and whole nations, than there is between those immense globes which appear so little to the eyes of the common people? The least consideration will be sufficient to convince us, that in the sight of God, to whom a thousand years is but as one day, and the whole universe as a drop in comparison of the ocean; there is nothing which is either great or little in itself; nor any event, however inconsiderable it may appear, that is unworthy his attention. Let us take the meanest plant, or

the smallest insect that we can possibly dissect, and we shall discover, even in its *smallest parts*, the same wisdom which shines in the structure of the *whole*. The least *fibre* contributes as much to the perfection of the whole plant or animal, as *they* do to the perfection of the entire *species;* and as the *species* does to the perfection of the *universe*. If therefore God has not thought it beneath him to *form* creatures which appear so despicable, why should it be thought beneath him to *preserve* them? Besides, how could the whole be perfect if the parts were not so? Or how could the whole species be preserved without the preservation of the individuals?

Plain reason proclaims this to us, and revelation completes our conviction. It teaches us that the very hairs of our head are numbered. A hair, the meanest appendage of our bodies, thousands of which we lose in the course of our lives without perceiving it, or suffering any sensible loss through it: even all these are numbered! And from this our blessed Saviour draws this conclusion, that with much greater reason God interests himself in our behalf, and condescends to honour us with his attention; and this he does more particularly because all men have been redeemed by the blood of his well-beloved Son; and have acquired new value in his eyes in consequence of becoming the brethren of the Lord Jesus.

O Eternal Providence! I adore thee in Christ Jesus;—I adore and bless thee O God! with the liveliest emotions of gratitude. Even before the foundation of the world thou didst lay the plan of my happiness:

before I could supplicate, and before I could return thanks! Can it then be possible that thou shouldest now forget me? My Redeemer has undertaken for me; he has even suffered the most cruel torments in my behalf; can it cost him too much to watch over me? No. He will preserve what he has so dearly purchased. Shall we then permit ourselves to be stumbled by the raileries of vain and wicked men? No. Let us confide in that Providence which the infidel would wish to persuade us takes no care of its creatures. Let us consider that we were not formed for this world, and that it is only in the world to come that the wonders of God's grace shall be manifested to us in all their splendor. But what are we O God, that thou shouldst think of us! Creatures so base, corrupted, and sinful? Who are we, that the Holy of Holies, the Being of beings, the Almighty, Infinite, and Eternal God should pay any attention to us! What is man that thou art mindful of him, and the son of man that thou visitest him! What motives should this afford us to walk before thy face in uprightness, abstaining from every appearance of evil! Thy eye is ever open upon us, and thou art pleased that we confide in thy providence. Lord, strengthen our faith, that we may not be stumbled by the depth and obscurity of thy ways! and grant that all the dispensations of thy providence may terminate in our endless salvation! Amen.

OCTOBER XXV.

THE MEASURE AND DIVISIONS OF TIME.

TIME is measured and divided according to the revolutions of the heavenly bodies, and especially by those of the sun and the moon. These two globes have most influence on the state of mankind. The revolution of the moon serves only to divide the time on our globe: but the sun undoubtedly serves to regulate that division in all the planets which turn round him.

Day is that portion of time which the sun takes up in making an apparent revolution round the earth; or, to speak more correctly, the time which the earth takes up in revolving round its own axis. That space of time during which the sun is above the horizon, is called an *artificial day:* this is the time of *light* which is determined by the rising and setting of the sun. The time of *obscurity*, that is, the time during which the sun is below the horizon we call *night*. The day and night taken together make the *natural*, or *solar day*. This day is divided into twenty-four parts, which are called *hours*. Each hour is subdivided into sixty equal parts, which are termed *minutes;* each minute into sixty *seconds*, and each second into sixty *thirds*. This division is capable of being extended still further, but it is seldom found necessary.

This division of the day into hours, minutes, &c. is pointed out by the shadow of the gnomon of a sun-dial, and by the hands of a clock or watch. Well constructed sun-dials always shew the true time of the

sun: but clocks and watches which are always regulated by the *mean* time of the sun, require frequent alterations. In common life the greater part of *Europeans* begin their day and their hours at *midnight:* from which to midday they reckon twelve hours, and twelve hours from that to the ensuing midnight. The *Italians* begin their day at *sun-set:* and from that to the succeeding evening they reckon twenty-four hours. The *Turks* begin their day a *quarter of an hour after sunset:* from which they reckon twelve equal hours; and when these are run out, they reckon twelve more to the following evening. The *Jews* begin their day at *sunset:* from which they reckon twelve equal hours to *sunrise,* and as many more from his rising to his *setting:* consequently the hours of their day are longer or shorter than those of the night, in proportion as the day is longer or shorter than the night.

A *week* is the space of *seven days.* A *solar month* is the time which the sun takes in passing through one sign of the zodiac: but these months do not begin and end exactly at the entering of the sun into a new sign. A *lunar month* is the time which elapses from one new moon to another: that is to say, twenty-nine days, twelve hours, and forty-four minutes.

The *solar year* comprises twelve *solar months;* that is to say, the time which the sun takes up in going through the twelve signs of the Zodiac; and this time is generally computed to be three hundred and sixty-five days, five hours, and forty-nine minutes. These years are at present in use among all the people of Europe. The *lunar year* is that space of time which

comprehends twelve *lunar months*, or twelve revolutions of the moon round our earth. It is composed of three hundred and fifty-four days, eight hours, and forty-eight minutes. The *Jews* and *Turks* still reckon by this year, but to make it correspond to the solar year, they often intercalate a whole month. Our common year begins ten or eleven days after the sun has entered Capricorn.

These measures and divisions of time, how unimportant soever they may appear in themselves, are nevertheless of great consequence in their application to civil life. The hours, days, weeks, months, and years, which constitute our earthly life, are granted unto us that we may use them so as to fulfil the great design of our existence. But how do we employ these precious moments? *Minutes* and *seconds* are in our eyes but trifles, which do not deserve our attention. Nevertheless it is certain, that he who takes no account of minutes will throw away hours. But are we more œconomic in larger periods? Alas! if from all the days which have been allotted us, we subtract those which have been entirely lost in respect to our immortal souls, how much of real and effective life will remain? Will it not appear as the result of this calculation, that man at the age of *seventy* years, has lost *fifty?* And that he who has arrived to fifty years, has scarcely spent seven of them in securing his eternal interests? O God of mercy, how distressing and humiliating is this consideration! What hundreds, what thousands of days and hours which have been entrusted to us by thy fatherly goodness, that we might

employ them in promoting the eternal welfare of our souls, have been shamefully consumed in departing from thee, thou best and most tender of parents! How many years spent in idleness and vice, in gratifying criminal passions, and in injuring our brethren! And with what inconceivable rapidity does the few moments that remain fly away! Without scarcely perceiving it an hour is already lost, irrecoverably lost! And an hour is a great deal to a man who may easily reckon his real and effective life by *hours*. Lord, enter not into judgment with us for the days which we have so miserably mispent! *And so teach us to number our days, that we may apply our hearts unto wisdom!* May we henceforth make a proper use of the time which thou mayest still condescend to grant us, by getting an interest in the grace of our Lord Jesus Christ, and an assurance of our eternal felicity! It is only by thus fulfilling thy merciful designs that we can be said either to have lived long or lived happily.

OCTOBER XXVI.

THE END OF SUMMER.

The sun is casting the last of his summer rays upon the earth: every thing with us is changed. The earth, which a short time ago was so beautiful and fertile, is growing by degrees dismal, poor, and barren. We no longer see that fine enamel of trees in blossom, the charms of spring, the magnificence of summer, those

hues and different shades of verdure in the woods and meadows, the purple colour of the grapes, nor the golden crops which clothed our fields. The trees have lost their late clothing; the pines, the elms, and the oak bend under the fierce blast of the north-wind. The rays of the sun are too feeble to warm the atmosphere, or penetrate the earth. The fields, which were so liberal in gifts, are now exhausted, and promise no more for this year. These melancholy changes must necessarily diminish our pleasures. When the earth has lost its beautiful verdure, its vivid colours, its splendor: in a word, its glory; when the fields present nothing but a boggy soil and dull colouring, we lose that pleasure which we before received through the medium of sight.

When the earth is stripped of its crops, its grass, and its leaves, nothing is to be seen but a rugged and uneven surface: it has no longer that striking appearance which the corn, herbage, and various kinds of pulse collectively produced.—The birds cease from their songs, and nothing recals to the mind of man that joy, that universal gladness which he before shared with all animated beings. Deprived of the pleasure which the melodious concerts of birds afforded him, he hears nothing but the murmuring of waters, and whistling of the winds; a continual monotony which can excite nothing but disagreeable sensations. The fields have lost their perfumes, and we respire only a sort of damp odour, which as it is not followed by the sensations of heat has nothing agreeable in it. The sense of feeling is injured by the impression of cold

and humid air. Thus the country presents nothing that can flatter our senses: the delicate nerves, which are their instruments, extend too much on receiving disagreeable impressions, and afterwards get into an extreme state of contraction. It is the same with all the muscles, to which the feeble rays of the sun can now communicate no energy.

But in the midst of these gloomy prospects we have still cause enough to acknowledge how faithful nature is to fulfil the eternal law prescribed to her, of being useful at all times, and in every season of the year. The winter approaches, the flowers disappear; and though the sun sometimes shines out, the earth no longer possesses her wonted beauty. Nevertheless, stripped and desert as the country is, it still presents to a feeling mind the *image* at least of happiness. With gratitude to heaven we may say; here we have seen the corn grow, lately these barren fields were clothed with abundant crops: it is true, that the orchards and gardens are stripped bare; but the remembrance of the presents which they have made us, cannot fail to mingle a sentiment of joy with the shiverings which we feel through the influence of the bleak north-wind.

The leaves of the fruit trees are fallen; the grass of the meadows is withered; gloomy clouds cover the face of the sky; the rain falls in abundance; the roads are cut up; and pleasant walking is no longer practicable. The man who does not reflect, murmurs at this, but he who is wise, beholds with emotions of joy the earth deeply drenched with rain. The wi-

thered leaves, and the yellow grass are prepared by the autumnal rains to form a rich manure to fertilize the land. This reflection, and the pleasing expectation of spring, should naturally excite our gratitude to the Creator for his tender care of us, and should induce us to repose our whole confidence in him. Though the earth has lost its beauty, and all its external charms, and though it be even exposed to the murmurs of the children it has nourished and delighted, it has nevertheless commenced its labour anew, and is working secretly for their future welfare.

But why is not the moral world as faithful to accomplish its destination as the natural world is? The acorn will always produce an oak, and the vine grapes; why then has not the great man children which always resemble him? Why have men of learning and eminent artists ignorant and stupid descendants? Why do holy parents bring into the world vicious and wicked children? When we reflect on this difference, we may find several natural causes for it: and we see that what often happens in the natural, may also happen in the moral world, viz. that the best vine, for lack of a good soil and temperature, will produce bad and sour grapes; and virtuous parents may have degenerate children. In carrying these reflections further, may we not look back on ourselves and say, are not our brightest days often obscured, and has not the glory that surrounded us often disappeared like the leaves of the trees?

Possibly our lot here below may have a vicissitude of seasons. In such a case we should have recourse

in the winter of our life, to the fruits collected in the days of our prosperity, and endeavour to make a good use of the fruits of our education and experience. If our harvest have been very productive, let us divide with the poor, whose rugged, or ill-cultivated soil could yield but a small portion of fruit. Let us studiously endeavour during the summer of our life, to have an autumn abundant in good fruits; honourable to ourselves, and useful to mankind. Happy if at the end of our *autumn* we may carry down with us into the grave, the glory of having borne some fruit to the honor of God, and the good of society!

OCTOBER XXVII.

THE MAGNIFICENCE OF GOD IN THE WORKS OF CREATION.

GOD has manifested himself in the creation as a being infinitely wise.

There is no creature, however useless it may appear to us, but what has its particular destination: and all are so formed as to answer in the most proper manner, the end of their existence. This we know certainly to be the case in those we are acquainted with, and we conclude the same of the others by analogy. If we begin with the *sun*, and descend to the smallest *worm*, or *plant*, we shall be obliged to acknowledge that, in order to be properly adapted to the ends for which they were created, they could not have been formed

in any other way: and that, relatively to those ends, there is no defect in them. The very smallest parts of each creature are evidently well adapted to their particular uses: they accomplish the functions which God has prescribed; and the whole creature would be defective, and could not answer but imperfectly the end of its existence, were any of its parts to be cut away or injured. And how wonderful is that *whole* which results from the relations and connections which the creatures have among themselves. Each is in its place; each has its proper functions; and these functions are necessary to the perfection of the whole; and none of these can fail without producing more or less disorder in the *whole*. When we represent to ourselves the Being who has formed this innumerable multitude of creatures, animate, and inanimate; who has not only designed each for a particular end, but has also disposed and arranged all its parts, so as to be most suitable to that end, without either superfluity or defect; who, by the union of all the individuals, has formed an admirable whole, where the most perfect harmony prevails; must we not be struck with astonishment, and cry out, O! the depth of the wisdom and knowledge of God!

God has manifested himself in the creation as a being infinitely good.

Every where he has dispensed being, motion, and life. What multitudes of animated beings has his beneficent hand produced! Ever since the foundation of the world, man has endeavoured to find out all the living creatures which inhabit the earth, and yet new

species are daily discovered which were hitherto unknown. Is not life an inestimable blessing to all that breathe? Is it not a benefit even to the vilest worm? What pleasure must God have in doing good, seeing he has communicated the blessing of conscious existence to so many beings! But of what use would their existence be were they to be immediately deprived of it? The Creator has taken care that every living creature shall exist as long as is necessary to answer his purpose in its creation. He has marked out to each creature the place of its habitation: and each finds at its entrance into the world, whatever is necessary for the preservation of its being. Many animals bring into the world with them that instinct and industry which they stand in need of to find their food. Others, as *man*, are supported and instructed by their parents. And with what an inexhaustible fertility has God endued the earth for the benefit of mankind! For nearly six thousand years he has nourished so many millions of men, and other animals; and were the world to subsist as long again, we need not doubt but he would continue to provide a sufficiency of nourishment for all succeeding generations. With life, how many pleasures and pleasing sensations does the Creator grant to animated beings, and especially to man? With what magnificence has he adorned and embellished the world, the place of his habitation! What comforts does he make him partaker of in social life! With what tender relations, warm affections, and delightful sentiments does he cheer his heart! Let us never be ungrateful to such an indulgent Creator!

Seeing we are endued with reason; seeing we are capable of knowing and loving our God; let us acknowledge with transports of joy, that the earth is full of the loving-kindness of the Lord.

God has manifested himself in the creation as a being infinitely powerful.

This unlimited power, which is seen at first view in all the creatures, may be still more particularly perceived in the two extremes; that which is *greatest*, and that which is *least*, in the universe. Who, but a being infinitely powerful, could have constructed the immensely extended firmament, that prodigious space in which such a vast number of huge worlds are contained! Who but himself could have hitherto preserved this vast edifice; established it so that it cannot be shaken; and yet support it in all its various and regular motions! Who else could raise the sun to such a height, appoint him his place, prevent his departing from it, and support him without a prop in this immense space! Could any thing less than infinite power give motion to the earth, the moon, and the other planets, so that they should revolve invariably in their appointed orbits, finish and begin afresh their revolutions at certain fixed periods?

If we consider the omnipotence of God in the *smallest* objects: here also we shall find it as incomprehensible as in the *greatest*. Let us only cast our eyes on the dust on which we tread. This dust is inhabited by an innumerable multitude of creatures; many thousands of which united would not amount to the size of a grain of sand! Nevertheless each of these has all its

external members and internal organs: each has its various sensations, each its peculiar instincts, is endued with the love of life, and seeks to preserve it. Behold the grass of the field, the hair of your head, and the blossoms of the trees; study their structure, their origin, and their use: and in all these you shall clearly discover the infinite power of him who forms the celestial bodies with the same ease that he creates a worm, or causes a blossom to spring forth.

Lord, how great and numerous are thy works! In wisdom thou hast made them all, and the earth is full of thy goodness. Teach us to be as attentive to these things as we ought to be, that we may know thou art the Lord who madest the heavens and the earth. Let these considerations be the means of filling us with love to, reverence for, and confidence in this most amiable, most magnificent, and most powerful of all beings!

OCTOBER XXVIII.

THE LAW OF INERTIA.

INERTIA is nothing more than the power of resistance, through which all bodies are disposed to remain in that state in which they are. When a body is at rest, it resists the motion which we desire to give it; but when it is once put in motion it persists in it from the same cause of inertia, and resists as forcibly those bodies which would stop its progress, as it did those

which first put it in motion. Nothing can be wiser than this law, which the Creator has established. Through this, bodies move with perfect regularity; and by it we can exactly determine the laws of motion and percussion.

If the celestial bodies had not this power of resistance, they could not move with so much order and regularity; and they must continually have a new moving cause to preserve them in motion. From this it appears, that an Infinite Wisdom formed and arranged the universe. The suppression of any one part of the immense edifice would bring the rest into disorder. Of what use would the regular structure of plants and animals, and the admirable arrangement of the celestial bodies be, if these different bodies were not susceptible of motion? But how simple is this law, and how wonderful are its effects! Such are all the works of the Creator: the principles are extremely simple, but the whole edifice is so much the more admirable. The universe resembles a magnificent palace: the strong and rugged walls on which the building rests, appear to have neither elegance nor beauty. Nevertheless they are so indispensable, that without them the least motion of the air would overturn the edifice.

However even these apparently rough foundations have their beauty, though every person is not capable of discerning it. One must be an architect himself, or at least be well acquainted with the rules of this art, in order to be able to enjoy the pleasure which the construction and symmetry of the foundations afford. None but an artist can perceive why the foundation

has that depth, breadth, and length, which the Architect has given it: he sees that it must be such as it is, that it may be what it ought to be: he has the satisfaction to be capable of forming a right judgment of the work; and he knows that the work is perfect. This is exactly the case in contemplating the works of God. Every spectator is not able to discover the fundamental laws on which the greater part of the phenomena depend, nor to find out the wisdom of the plan. This knowledge is reserved for the true philosopher, and is to him a source of inexpressible pleasure.

It seems as if there was also a certain *inertia* in *mind*, as well as in *matter*. Bodies which constantly move in the same way, and to the same point, have a certain tendency to it. The human spirit has a certain propensity to those actions which we have often in the same way repeated. Hence it is, that we find such difficulty to conquer certain *habits*. Now we might make an excellent use of this natural *inertness* of our minds, in using it to strengthen us in virtue. In order to this we should often repeat the same acts, till we feel ourselves as much accustomed to good and virtuous actions, as we are at present to those that are vicious. This is so much the more important, as without virtue we can never arrive at true and solid peace. But whence come the mistakes into which we so frequently fall in this respect? Why do we continually pursue imaginary good, which in the end leads us to destruction? Our hearts, seduced by that pride which is natural to them, and dazzled with the false splendor of sensible things, cause us reluctantly to approach the

paths of uprightness. But let us not be discouraged with being obliged to do violence to our evil passions and propensities. The vicious themselves are often obliged to restrain and resist their passions in order to procure some temporal advantage, or to escape some particular danger. And the efforts which they are obliged to make in order to resist their sensual appetites and desires, must be very bitter and grievous to men of corrupt minds. On the contrary, what pleasing satisfaction must they feel, whose souls have resumed the authority which they should ever maintain over their senses! A frequent exercise of this authority may be a mean of conducting us to that happy state, where the soul elevated (so to speak) above the tumultuous region of passions, sees, with pity, the mean and despicable swarm of the slaves of vice.

There is a good deal of strength in the above reasoning: but I am firmly persuaded, that a habit of righteousness never was, and never can be acquired merely by a repetition of acts. The power of God alone can dispose the soul to do good: and it ever was, and ever will be the prerogative of the grace of Christ to change the human heart. Yet he who acts in the above way, *under the Divine influence*, will certainly come good speed.

A. C.

OCTOBER XXIX.

THE WANTS OF MEN.

THERE is no creature on the earth which has so many wants as man. We came into the world naked, destitute, and ignorant. Nature has not endued us with that industry and those instincts, which beasts have at their birth: reason only has been bestowed on us, that we might acquire through it requisite talents and knowledge. In this respect the state of the brute creation may appear enviable. Is it not happy for them that they have no need of the clothing, instruments, and conveniencies which are so requisite for us; and that they are not obliged to invent and exercise that multitude of arts and sciences, without which we could not procure ourselves the necessaries of life? They bring with them at their birth clothing, arms, and every thing they need; and if they want any thing they can easily procure it by means of those natural instincts which they blindly follow. If they want dwelling-places they know either how to dig or build them. Have they need of beds, coverings, changes of raiment, they know how to spin or weave them; to cast off their old garments and get new. If they have enemies, they are provided with arms for their defence: if they be sick or wounded, they know where to find proper remedies. Now we who are so superior to all other animals, have more wants and fewer means of supplying them.

It may be asked, why the Creator has in all these respects privileged man less than the beasts? This cu-

riosity is doubtless excusable, provided it be unaccompanied with complaining. The wisdom of the Deity is manifested in this as well as in every other thing. In subjecting men to so many wants, God designed that they should be continually obliged to exercise that reason which he has given for their happiness: and which to us supplies the place of all the resources of other animals. And because we are destitute of those instincts with which they are endowed, we are obliged to use our reason in order to gain a knowledge of the world and of ourselves; to be active, diligent, and laborious, that we may guard against want, pain, and disappointment; and so lead a quiet and pleasant life. By using our reason, we see the necessity of bridling our strong passions, and avoiding those excesses which might prove fatal to us. A few examples may convince us of this. If we could procure fruits, and all other necessary aliments without labour, we should infallibly become indolent and idle, and would spend our lives in the most degrading sloth.

The noblest faculties of man would be enfeebled and become stupid. The bonds of society would be broken: for men would no longer live in a state of mutual dependance. Even children could then do without the assistance of their parents, and would need no help from others. The whole human race would fall into a state of barbarism and savage stupidity; each, like the brutes, would live for himself, and there would be neither subordination nor mutual obligations, nor good offices. It is to our wants that we owe the developement of our faculties, and the prero-

gatives of humanity. They awaken the mind, dispose us to activity and industry, by which our lives are made more easy and pleasant than those of other animals. Our wants have made us sociable, rational, and regular in our manners: and have led us to invent a multitude of useful arts and sciences. In general, an active and laborious life is both useful and necessary to man. Were not his strength and faculties brought into action, they would become a burden to himself: he would gradually fall into stupid ignorance, into low brutal indulgencies, and into all the vices necessarily resulting from them.

Labour on the contrary puts the whole machine into a pleasing state of action, and procures us satisfaction and pleasure, in proportion as it requires invention, reflection, and knowledge. Natural wants were to us indispensably necessary, that we might be rational, wise, social, virtuous, and happy. If after having been fed with our mother's milk we had no need of succour or instruction, we should live for ourselves alone, refer every thing to ourselves, learn no language, and make no use of our reason: stupid, and profoundly ignorant of ourselves and other beings, we should understand neither arts nor sciences, and be strangers to the noblest pleasures of the mind. But now the wants of children, and the helpless state in which they come into the world, oblige the parents, through pity and tenderness, to take care of them; while the children on their part are attached to their parents through a sense of their wants and a fear of danger, they submit to be guided and formed by their example and instruc-

tion; and learn from them how to use their reason and to act uprightly. Thus they may become worthy people and good citizens, and be enabled to lead an honest and happy life. Possessed of such advantages, we may easily dispense with those which the animals appear to have over us. We have no need of furs or feathers to clothe us; no need of teeth and talons to defend us, nor of certain natural instincts and sensations to procure us the things necessary to our support and preservation. These gifts of nature would only degrade us, and bring us into a state of mere animal perfection. Our senses, our reason, and our hands suffice to procure us clothing, weapons, food, and every necessary for our safety, support, and pleasure; and enable us to apply to our use all the riches of the kingdom of nature.

We see therefore that the wants of which so many complain, are the very foundation of our civil happiness; and the best means which the wisdom and goodness of God could choose to direct the faculties of men to their greatest advantage. Were they only wise enough to exercise themselves in this way, they would save themselves a great deal of trouble. Not one in a hundred of the miserable could attribute his distresses to misfortune; and we should confess that the quantum of good far exceeds the quantum of evil: that our afflictions are softened by a thousand advantages; and that it is in our power not only to lead a tolerable, but even a happy life.

OCTOBER XXX.

ON PRÆSENTIMENTS.

THE faculty which our souls have of foresight manifests itself by such extraordinary effects, that it must strike us with astonishment. The sensations and representations which foresight produces, are sometimes so obscure and wrapped up in the essence of the mind that we are not conscious of them. The soul however draws very exact conclusions from them; and the image of the future presents itself clearly enough to convince the mind that has that preconception. It then forms conjectures and presages without knowing how it has been led to them, and in its astonishment, often mistakes them for inspirations. This is what is called *Præsentiment;* when, without being able to account for the way in which we foresee a future event, we have notwithstanding an idea more or less clear of it. But it should be here observed, that *præsentiment* is in its nature a representation much weaker than *sensation;* therefore it cannot be well distinguished when the senses and a heated imagination put the soul into a violent agitation. But when the soul is calm *præsentiments* are more clear: hence it is that they take place chiefly in the silence of the night, in sleep, and in dreams. At such times man is often raised above himself; the veil which covers futurity is drawn from before his eyes, without his knowing how it was done; and he can speak of future events, while he is scarcely able to see those which pass before his eyes.

On Præsentiments.

A multitude of facts prove beyond a doubt that the soul has the faculty of sometimes foreseeing the future: and he must have a slight acquaintance with nature, who would deny a thing merely because it appears extraordinary, or inexplicable. This secret and unknown emotion, which warns us sometimes of what is to happen, really exists in the essence of our souls; and history is so full of examples of this that we cannot possibly deny them all. Few persons have arrived at mature age without having had some such præsentiments. The soul is a representative power of the universe, in reference to the place it occupies in it: it has the faculty of representing the past as well as the present, why then may it not have the faculty of representing the future also, and even contingent events? It may employ for this purpose means similar to those which it uses to represent the *past*. Provided it have been informed of past events, it can represent them as if they were present: and why should we consider it an impossible thing that it should be informed of future events? In the universe there are millions of intelligences superior to man who may reveal to him some part of futurity: or there may be in the human soul a certain power hitherto unknown, which enables man to foresee distant and future events.

But however obscure and inexplicable the cause of præsentiment may be, it is enough for us to know that it may contribute in a direct or indirect manner to our happiness. At one time it may warn us of our approaching danger: at another time it announces

some pleasing and happy event. In both cases this præsentiment may be very advantageous to us: we have only to take care that this faculty of our soul become not our torment, but that it serve on the contrary to establish and increase our tranquillity. We must particularly guard against all superstition: we must not trust too much to these *præsentiments*, nor draw rash conclusions from them. They must not lead us to neglect the performance of any duty; and we must never forget that God alone deserves all our confidence.

OCTOBER XXXI.

A HYMN ON THE POWER AND PROVIDENCE OF GOD.

God is my song. He is the strong God; the Lord is his name; his works are great, and his government extends to the heavens.

He wills, and speaks, and millions of worlds spring into existence: he threatens, and worlds are reduced into dust.

Light is his garment; his counsels are wisdom and truth. As God he reigns; truth and righteousness are the foundation of his throne.

Monarch of all the world! Who is like unto thee? Without beginning of days, or end of time! The only, the never-ceasing source of glory, riches, and happiness!

Hymn on the Power and Providence of God.

All that is, was, or shall be in heaven, earth, or sea, is known by the Lord. His innumerable works have been before his eyes from eternity.

He encompasses me; he watches over me; and under the shadow of his wings I rest in safety. None of my actions can escape his notice: he searches the heart.

He is nigh to thee; he knows thy rising up and lying down: he sees thy thoughts long before they are formed. Shouldest thou climb up to heaven, he is there: shouldest thou fly on the rays of light to the limits of the universe, he is there also.

He knows my troubles; he hears my prayers; he understands all that passes in my heart. My good and my bad actions are equally known unto him; and when I stumble, his merciful hand upholds me.

From eternity he has purposed my welfare: what ever concerns me is written in his book; his finger marked it down before I was born; as also the number of my days.

I have nothing but what has come from God!—Lord, I am thine! It is by thy goodness I live. Therefore I will give glory to thy name, and thy praise shall be eternally in my mouth.

Who can comprehend and recount the grandeur and magnificence of thy wonders! Every grain of dust announces the power of its Creator.

Thy wisdom is seen in the smallest spire of grass: air, sea, fields, vallies, and hills proclaim thy praise.

Thou waterest the earth, and spreadest a verdant carpet under our feet: we are encompassed by thy

mercies: the day and the night; the corn and the fruit of the vine: plenty and joy, all come from thee.

A sparrow falls not to the earth without thy notice:—shall I then abandon my heart to vexation, and not confide in thy paternal care?

If the Lord be my protector, my sun, my shield, and my deliverer, I have nothing to fear from heaven nor from earth; nor shall all the powers of hell cause me to tremble.

NOVEMBER I.

A HYMN OF PRAISE.

Thou, O Lord, hast created the hosts of heaven; and the blessed spirits which encompass thy august throne. The heavens in their immense extent, and all the magnificence with which thou hast adorned them, are only the tabernacles of those sublime intelligences which know and adore *thee*.

Thou hast adorned this globe of earth with a thousand beauties which enchant the mind. The sun which illumines these worlds, fertilizes the earth, and enriches it with so many benefits, is so established by thee that he cannot be moved.

At thy command the moon, the flambeau and ornament of the night, favours us with her mild light.

Hymn of Praise.

Wherever we look, wherever we go, we see new proofs of thy goodness: on us thy blessing continually rests.

Springs and unfailing fountains bubble forth in our behalf, and furnish us with limpid and wholesome water. The gentle dew waters and refreshes our meadows. Mountains and vallies, forests and fields, present us with a thousand thousand beauties. The whole earth which thy hand supports in the immensity of space, is full of thy riches; crowned with thy goodness, and fertilized by thy bounty.

Let us bear without murmuring the afflictions of life; frequent blessings, and especially the blessed hope of eternal felicity, shall assuage our griefs. The magnificent spectacle of nature shall reanimate us, and the beams of his grace shall dry up our tears.

But who can fathom the depth of thy ways! In this life good and evil walk side by side: earthquakes, thunder, tempests, war; contagions, and innumerable maladies disturb the repose of mortals:—we shall fall before death: he spreads devastation every where, and respects no person.

A blast overturns us and precipitates us into the tomb, and we are reduced into dust. But everlasting thanks be to God, we expect a new life through the Lord Jesus, who has conquered death, and brought life and immortality to light by his gospel!

NOVEMBER I.*

MARINE ANIMALS.

At first it seems difficult to believe that living creatures could be found in the sea. It contains so many different kinds of plants, herbs, trees, and bushes, which so grow and twine together, that this must apparently render the paths of the great deep impassable, as nothing but confusion and disorder seem to reign in that extensive wild. But can there be in the sea living creatures connected with each other? Nothing is more true, how strange soever it may at first sight appear. And it is not some individuals only that the sea contains, but such an innumerable multitude of different *kinds*, that we are very far from knowing them all, much less can we tell the *individuals* which belong to each species.

Among this innumerable multitude of animated beings there is no confusion; they may be all easily distinguished; for in the sea as well as every where else the most perfect order prevails. All these creatures may be ranged in certain classes: they all have their particular nature, food, manner of life, characteristics, and peculiar instincts. In the sea, as well as upon the land, there are gradations, shades, and insensible steps from one species to another. One begins where the other ends. The stone which is at the highest step of the ladder in the mineral kingdom, is one half of it a plant. The plant which terminates the vegetable kingdom, belongs in part to the animal kingdom: and the beast which connects the human

and the brute creation, has a great resemblance to man. So likewise in the sea nature passes gradually from little to great; perfects insensibly the different kinds, and unites all beings by an immense chain, which is not deficient in a single link.

What a prodigious multitude of inhabitants must the sea contain! What a variety is there among them! What a diversity in their forms, instincts, and destination! Some are so small that they can be scarcely perceived; others are so large that we are terrified at their enormous bulk. Some are entirely without ornament, and so like the sea in colour, that it is almost impossible to perceive them in that element. Nature has adorned others with the most vivid and magnificent colours. Some kinds do not multiply much, because if they did they would devour and destroy all the rest. Others, on the contrary, multiply prodigiously, because they serve for food to men and other animals.

Lord, how numerous are thy works! In wisdom thou hast made them all: the earth is full of thy goodness, so is this great and wide sea, wherein are creatures innumerable, both great and small animals. There go the ships, there are the great whales which thou hast formed to sport therein. These wait all upon thee that thou mayest give them their meat in due season. *Psa.* civ. 24—27.

NOVEMBER II.

THE WISDOM OF GOD IN CONNECTING ALL PARTS OF NATURE.

As all the members of our bodies taken collectively form but one whole, constructed and arranged with the utmost wisdom; in like manner the different kinds of natural productions are so many parts out which the Supreme Wisdom has formed one perfect whole. A little attention only is necessary to convince us that every thing in nature is connected so as to form a perfect system. Different kinds of mineral earths manifestly nourish and support the vegetable kingdom, without which animals could not exist. Fire, water, and air, are indispensably necessary for the preservation of this terrestrial globe: there is therefore an indissoluble bond between all the beings of which our globe is composed; and philosophers have demonstrated that the globe itself has a necessary connection with the sun, the planets, and the whole creation. Now to connect together this infinite multude of different beings, and to form but one *whole* out of all these parts required unbounded wisdom. This alone could connect so many millions of different creatures, and unite them in such a manner that they should subsist in continual relation to each other, and minister to each other's support.

That we may not lose ourselves in this immense ocean of creation, let us only consider our own globe, which is one of the most inconsiderable parts of the universe. The wisdom we discover in it will enable

us to judge of what is manifested in the rest of the creation. At present let us reflect only on what is before our eyes. If we examine the animal kingdom in the relations it has to the rest of nature; if we reflect on the wants which are common to all the animals, we cannot but be struck with the admirable harmony which we discover it. Heat, air, water, and light, are absolutely necessary for the preservation of all creatures. But there must be a just proportion of them. Too much or too little would be equally injurious, and make a general chaos of nature. One degree too much in the universal heat would destroy every living creature. For if our earth, taken in the whole, received more heat from the sun, it would necessarily follow, that the summer would be hotter in every climate than it is at present. But experience tells us that in all countries the heat is sometimes so great, that were it to be increased a little, either in degree or duration, all the animals must perish, and all the vegetables be burnt up. On the other hand, if we had less heat we should be equally injured; seeing at present the cold is sometimes so intense, that many animals are in danger of being frozen to death: and it is not an uncommon thing to see some killed by the severity of the cold. The earth therefore receives that degree of heat from the sun which is proper for all the creatures, and any other degree would be destructive. There is the same just proportion in the air. The ascent of vapours depends chiefly on the *weight* of the air, and the rain on its *lightness*. Now if the air could not condense and rarefy itself alternately,

and become at one time heavy, at another time light, we should not have that diversity of temperature which is so necessary for the vegetation of plants, and consequently for the life of animals.

Were the air in general more *weighty* than it is, it would be more laden with vapours, clouds, and fogs; and through its excessive humidity would be injurious to plants and animals. If on the contrary it were *lighter*, the vapours could neither ascend nor collect in clouds. It is the same every where. Nature observes a just medium in all things; and as all the elements are so arranged as best to secure the preservation of animals, so they are in perfect harmony with all the other parts of nature. The air not only produces those variations of temperature which are so necessary, but it is at the same time the vehicle of *sound*. It has been appropriated to our ear, and here again a marvellous wisdom is manifested: for if the air were more or less *elastic;* were more *dense* or more *rare;* the ear would suffer by it greatly; and the soft and pleasing voice of man, would either resemble claps of thunder, or the hissing of serpents. The air also contributes to the circulation of the blood: it penetrates the very smallest ramification of the veins: were it more *dense* its force would break every thing: were it more *rare* its action would be too weak. There are a thousand other relations between the air and different beings; and it has all the properties that each requires.

Now if we consider that many thousands of plants and animals have equal need of air, heat, and light;

that each of these species is different from the others; that it has its distinct and peculiar characteristics; that it is weaker or stronger than others; and that nevertheless these elements are equally suited to all, and supply their different wants; shall we not acknowledge that an unbounded wisdom, to which nothing is difficult, has established these admirable and harmonious relations among so many different beings? In a word, every thing in nature is made in number, weight, and measure, and directed to the accomplishment of determinate ends. Not only the trees which rise so majestically, the plants which have such beautiful forms, the fruitful fields and meadows, the serviceable horse, the flocks which feed us, the mines which produce so many ornaments and so much riches; the sea, which garnishes our tables with such exquisite fish; and which conveys navigators from one part of the world to another; the planets which have such influence on our globe; not only, I say, those brilliant parts of the creation, but even the *mosses*, the *shell-fish*, and the *insects*, all contribute to the perfection of the whole.

Infinitely powerful Being! Creator and Preserver of all things! Can I contemplate these objects without thinking of thee and admiring thy wisdom! Without thee, without thy salutary influences all would be in darkness, confusion, and disorder: there would be neither connection, harmony, nor pleasure upon earth.

"Yes, Lord, it is thy wisdom which adorns, enriches and supports all things. It is thy wisdom

which gives life and happiness to the animal creation. Let it ever be the subject of our songs. May we praise thee incessantly O our God, and sing hymns to thy honour; for to thee appertain both wisdom and strength."

NOVEMBER III.

BED.

PERHAPS in summer we have not been so sensible as we ought of the comforts of a *bed:* but now that the cold daily increases, we begin to consider this as one of the particular blessings which we receive from the kindness of God. If we were deprived of it in these cold nights, perspiration could not be carried on so well; our health would be impaired, and our sleep would not be so comfortable and refreshing. On this account bed is a considerable benefit to us. But whence comes that warmth which we feel in it? We mistake if we suppose it is the bed that warms us: far from being able to communicate any heat to us, it is from our bodies which it receives its warmth. It only prevents the heat which evaporates from our bodies from being dissipated in the air: it confines and concentrates it.

We shall be more sensible of this blessing, if we consider how many creatures concur to procure a quiet sleep. How many animals must furnish feathers and hair for this purpose! Supposing that a common bed

* *Bed.*

contains *fifty-six pounds* of feathers; and that one goose produces about *half a pound:* the spoils of *one hundred and twelve* geese will be necessary for one bed! But it requires many hands and materials besides. Now by such calculations as these, we may learn the better the value of God's blessings. Generally we consider the blessings he communicates in a very superficial manner: but if we examine them in detail, we shall form a different opinion of them than what we commonly do. Let us consider the different parts of which our bed is composed, and we shall be astonished to find that it requires the labour of *ten* men at least; that it has cost the lives of as many animals; that the fields must furnish flax for the sheets and quilts; sheep, wool for the blankets; the forests timber for the bedstead, &c. We see then that a considerable part of the creation is put in motion to afford one refreshing night's rest.

We may make the same reflections in the most common daily blessings we enjoy. Our linen, clothes, shoes, and stockings, meat, drink; in a word, all the necessaries of life, can only be procured for us by the united labour of a multitude of persons. Can we then lie down in our beds without feeling sentiments of gratitude? At the conclusion of each day we have a thousand other subjects of praise to God; but had we only this, it would deserve our utmost gratitude. What sweet repose, what comfort do our beds afford us after the fatigues of the day! In these cold nights the best warm room would by no means answer so good an end to us as a bed. A warm apartment can give only an

unequal heat; whereas the whole body is equally warmed in bed, and that with the most temperate degree of heat. By means of this we can procure ourselves, at little expence, the warmth, comfort, and rest which are requisite. If then it be a mark of irreligion for a man to sit down to food without giving God thanks, it is more so to lie down in bed without being thankful to him; seeing the refreshment which our bed affords us is of longer duration, less expensive, and not less necessary for our health. Let us therefore bless God for this enjoyment, and never forget the excellence of the blessing. We should be the more thankful, when we consider how many of our fellow-creatures either have no beds to rest on, or cannot rest on them. These distressed people highly deserve our pity. How many are exposed to the open air, in all the inclemency of the season, travelling either by land or water! How many confined in prisons, or in wretched cabins, who long for rest, and would think themselves the happiest of mortals had they but a small part of the blessings which we enjoy!

It is not unreasonable to suppose that the hundredth part of the inhabitants of a town or city are found in such distressing circumstances as these. What advantages have we over them! How many of our fellow-creatures are obliged to watch the whole night! The soldier at his post, the sailor in his ship, &c. But how many are there, who though they have beds cannot find rest on them? In the compass even of a few miles, how many sick persons are there whose pains prevent

them from sleeping! And others are kept awake by carking care. Sinners by remorse of conscience are deprived of the sweets of sleep: with many other wretched people, whose secret afflictions and poverty, together with their anxiety for the future, do not permit them to take the least repose. Now what is our duty in reference to them? If we have not the ability to supply their wants, and assuage their pains; let them at least share our compassion, and have an interest in our prayers. As often as we seek rest in bed, let us pray for those who are deprived of it; either through sickness, anxiety, poverty, or any other cause of distress. Let us especially remember those who are obliged to lie on the bare ground. Let us think also of our sick and deathbed. We shall not always sleep as comfortably as we do at present. Nights may come in which we may water our couch with our tears; and in which the pains of death shall compass us about. But even these shall be followed with a peaceable rest in the grave. If we sleep in the Lord we shall awake again with new energy; and contemplate the glories of our God. Let us therefore, in the days of our health and prosperity, think of this last bed, our bed of earth; and let us live so as to be able to think of it with satisfaction and joy.

NOVEMBER IV.

REFLECTIONS ON THE PAST SUMMER.

THE fine days are gone; and except the pleasing recollection of having enjoyed them, they leave us nothing but emblems of frailty. How is the whole face of nature changed! The rays of the sun fall faintly through the gloomy clouds, on gardens stripped of their flowers, on fields where no traces of crops remain, and on hills where little verdure is to be seen. The air no longer resounds with the melodious singing of birds, and the gloomy silence which reigns every where is only interrupted with the croaking of jackdaws, or the shrill cries of those birds of passage which now take their leave of us in order to seek a warmer climate. The surrounding mountains are deserted; they are no longer covered with flocks, nor enlivened with the bleating of the sheep: the hotbeds and parterres are laid waste. What a gloomy and dismal aspect does the whole country wear which was lately so beautiful! Instead of that lovely verdure, the principal ornament of the fields; they present little to the eye but a pale and dismal yellow. The clouds are laden with cold rain, and the thick mists veil the serenity of the morning.

Such are the prospects which nature now presents; and who can view them without reflecting on the frailty and inconstancy of all terrestrial things? The fine days are gone, just while we were preparing to enjoy them, they are fled away! Bnt have we a right to murmur and find fault with the dispensations of the Lord? No,

certainly: we should rather recollect these summer days, and the innocent pleasures with which they have been crowned; and return praise for them to the Ruler of seasons. What sweet sensations have been impressed on our hearts; with what pure joy have our souls been filled when we contemplated the beauties of nature; when the mountains and the vallies grew green before our eyes; when the lark in the luminous clouds, and the nightingale in the shady thickets caused their harmonious notes to be heard: when we respired the sweet perfumes of the flowers; when the dawn, immediately succeeding the twilight, diffused joy and gladness around; and when the setting-sun tinged the forests and hills with the most beautiful red. What happy days have we spent in the enjoyment of beauteous nature! What rich presents have been made to us by the gardens, orchards, and fields; exclusive of the pleasures which our imagination and senses have received from them! Can we think of the past months without feeling a sweet emotion, and without praising the Parent of nature, who has crowned the year with his goodness?

We now live on the gifts of summer and autumn. We have seen with what activity nature laboured in those fine seasons, to accomplish the beneficent views of the Creator in the behalf of man. How many plants and flowers has spring thus produced! What crops of fruit has summer ripened: and what an abundant harvest has been collected in autumn! The earth has now fulfilled its design for this year, and is going to repose for a short time. Thus nature is con-

tinually employed during the greatest part of the year: even in her rest she is active: and in silence prepares a new creation. Have *we* been equally active? Have *we* employed our time so as to bring forth fruit? The husbandman now counts his sheaves: should we not be able to reckon some virtues; some good works? Have the pleasures of summer rendered us better and more grateful? Has a contemplation of nature excited us to lift our hearts to God? What have our occupations been during the long summer days? Have they contributed to the glory of God, and the good of our fellow-creatures? In contemplating the sun, the flowers, and so many delightful objects, have we felt those sentiments which such magnificent scenes are calculated to excite? Are we conscious that this summer has not, like many others, been lost upon us?

We are still blest with life; and can reflect on the spring and summer which are just elapsed. Can all those who have seen the first of May, say as much? Alas, many of them before the end of the summer; yea even before it began, have passed from the land of the living into the empire of the dead. It is right, O our God and Preserver, that we should bless thee for our continued existence. But we also shall soon depart:—and possibly we have seen our last summer! And what shall become of us, if we be called to give account of the manner in which we have spent the past!—Enter not into judgment with us O God!

NOVEMBER V.

INCONVENIENCIES OF THE NIGHT.

At this season the nights continually increase in length; and it cannot be denied but this arrangement is in some respects disagreeable. For although a part of the night is appropriated to strengthen and refresh us by sleep, this very circumstance points out to us the weakness and frailty of our nature. Hence it is, that at the commencement of the night, all our employments are interrupted, not only from the want of light, but also from the necessity of repose, and from the animal strength and spirits being exhausted. It is no wonder therefore, that the hours of the night should appear so long and tedious, especially when we are restless and cannot sleep.

With what impatience does the sick man count the hours, and long for the rising of the sun!—Another inconvenience of night is, that we are exposed to lose our way and meet with disasters. When the light of the sun is withdrawn, and the shades of night veil the sky, we cannot see where we walk, we are every moment stopped and make false steps. How many travellers wander in the night time; get into bad roads among briars and thorns, bogs and pits, and by falling over precipices meet with instant death! Besides, during the night we are exposed to attacks, either in our own houses or on a journey, by wicked and perverse men; for the darkness of the night is favourable to all sorts of crimes, encourages the disturbers of the public peace, and veils their transgressions from the

eyes of men. What renders the nights still further inconvenient is, that they are *cold:* for when the sun is set and his rays are withdrawn, one half of the globe is deprived of his vivifying heat, as well as of his light, and this renders the long winter's nights very disagreeable. We may add to all this, that night by its regular return presents us continually with a new emblem of death.

There is neither constant night nor day upon the earth: and although the time of darkness in winter is long; and that even during the summer, the regular returns of darkness cause the division of days, it is nevertheless certain, that God has given our globe more light than darkness; an advantage which we enjoy by means of the twilight, and by the light of the moon and stars. Blessed be the Lord for the light of the moon and stars! Blessed be his name for the light of the sun and the splendor of noonday! But more especially may his name be magnified for the light which his gospel has diffused over the dark night of ignorance, error, and misery! Some rays from the heavenly world fall upon us and enlighten us in the dark path in which we walked! Let us remember that in our most obscure nights, in our times of sorrow and distress, we are marching to the region of light and joy. Should it sometimes happen that sleep forsakes us in the midst of the darkness of the night, and that sickness or perplexing cares cause us to reckon the melancholy hours, let us comfort ourselves with this thought, that we are not buried without hope in the darkness of an eternal night, but that we are advancing towards our

heavenly country, towards those blessed mansions where there is no night, no alternatives of light and darkness, no sorrow nor anxious care.

Blessed be God that the night of ignorance, darkness and distress, with which we are encompassed here below, is not an eternal night? Heaven and an endless glory will soon be the portion of the righteous. Sun and moon, and ye radiant stars which blaze in the firmament, hasten on and finish the race set before you! Increase your speed that the time of trial, the revolutions of day and night, of months and years, which are assigned me may be terminated. May the light of faith enable me to discover the dawn of that great day, when all the nights and darkness which surround me shall end for ever! Morning of eternity, haste thy appearing; that all my hopes may be realized! I long to arrive in those blessed mansions of that permanent city where there is no night; but where an everlasting day shall incessantly perfect our knowledge, our holiness, and consequently our felicity!

NOVEMBER VI.

REFLECTIONS UPON WOODS.

Woods form one of the most beautiful pictures which the surface of the earth presents to the eye. It is true that at first sight they are unadorned beauties; for we see at first only a confused collection of trees, and a dreary solitude. But an enlightened observer,

who terms every thing beautiful which is good and useful, finds in such sights a thousand things worthy his attention. Let us therefore visit the forests, they will furnish us with many subjects of admiration and gratitude.

Now that the walks in the fields and meadows are not so pleasant as they were in the summer; the forests are *more* interesting, and will yield us solid pleasure. For there is no place that invites us more to meditate on the grandeur and beauty of the works of nature than a lonely wood: the pleasing obscurity, and the profound silence which reigns there, lead us to recollection and awaken our imagination.

The multitude and variety of trees are the first things which attract our attention. They are not so much distinguished from each other by their height as they are by their manner of growth, their leaves, and their texture. The resinous *pine* is not remarkable for the beauty of its leaves; they are narrow and pointed, but they last long like those of the *fir*; and their verdure during the winter, recals to our memory the beauty of the summer months. The foliage of the *lime* tree, the *ash* and the *beech* is much more beautiful and varied. The verdure of these is admirable: it relieves and strengthens the sight: and the broad indented leaves of some of them, form an admirable contrast with the narrow fibrous leaves of others. Their seeds, manner of being propagated, and the use of their fruit are as yet but imperfectly known. But to what a variety of purposes may the timber of trees be applied! The *oak*, the growth of which is so slow, and

which only begins to put forth its leaves when other trees are adorned with them, furnishes the hardest wood, out of which the joiner, the cabinet-maker, and the carver, know how to form a variety of works which are so durable as even to defy in some measure the wastes of time. Lighter wood serves for other purposes: and as it is more plentiful, and grows quicker, it is of more general use.

It is to forest trees we owe our houses, our ships, a part of our fuel, a thousand moveables, and a thousand important articles of furniture. Wood is the principal matter, or most natural pabulum of fire; without which in many countries men could neither prepare their food, nor carry on their manufactures. The industry of man has taught him to polish, turn, cut, and carve wood into a multitude of works, as elegant as they are durable. The Divine Wisdom has distributed forests with more or less abundance over the whole earth. In some countries they are at a great distance from each other: in others they occupy many leagues, and raise their majestic tops to the clouds. A scarcity of woods in some countries is compensated by their abundance in others. Neither the continual use which men make of them, nor the ravages of accidental fires, nor the vast quantities consumed in severe winters, have yet been able to exhaust these rich gifts of nature. In the space of twenty years we see a forest, where we had before discovered some low copse, or a few scattered trees.

Do we not plainly see in all this the power and goodness of our heavenly Father? How superior is his wis-

dom to ours! If we had assisted at the works of creation, probably we should have found many objections to the production of forests; we should have preferred orchards and fertile fields. But that Being who is infinitely wise has foreseen the necessities of men in all possible circumstances. And it is in those very countries where the cold is most intense, or wood is needed for navigation, that the largest forests are found. From their unequal distribution a considerable branch of commerce results, and new connections are formed among men. Each of us partakes of the numerous advantages which woods afford to men; and in creating forests God has designed the particular good which results to each. Blessed be thou our heavenly Father, who hast condescended to think of us before we felt our necessities, or could represent them to thee! In every thing thou hast prevented our wishes, and liberally provided for us! May we answer the end for which we were formed, and for which we have received so many benefits, and pay that tribute of gratitude, love, and praise, which is so justly thy due!

It is not left to man to plant and maintain forests. All other goods must be acquired by labour. The ground must be ploughed, and the seed sown at the expence of much trouble and toil. But God has reserved the trees of the forests to himself; he has planted, he preserves them; and man has little to do in their cultivation. They grow and multiply independently of his care; they repair their losses continually by new shoots; and there is always enough to supply our necessities. To be convinced of this we have only

to cast our eye upon the seeds of the *lime tree*, the *maple*, and the *elm*. From these little seeds vast bodies are produced, which rear their heads to the clouds. It is thou alone, O Lord God Almighty, who hast established them, and hast supported them for ages against the efforts of winds and tempests! It is thou who sendest dew and rain sufficient to make them renew their verdure annually, and to keep up a kind o. immortality among them.

The earth which bears the forests does not produce them; and we might even say, that it does not nourish them. The verdure, flowers, and seeds, with which trees are annually covered, and of which they are annually divested; and the sap which is continually dissipated, are losses which would in time exhaust the earth itself if it furnished the matter for them. Of itself it is a dull, heavy, dry, and barren mass, which derives from other quarters the juices and nourishment which it communicates to plants. The principles of their growth do not proceed from the earth; but the air, without our assistance, furnishes an abundance o. water, salt, oil, and fire, and all other matters which are requisite for the growth of trees.

O man! laden with so many benefits, raise thy heart to that great Being who delights to do thee good. Woods and forests are heralds of his bounty, and thou must be guilty of the greatest ingratitude if thou neglect to acknowledge this benefit, which almost every part of thy house must recal to thy memory.

NOVEMBER VII.

THE SENSE OF FEELING IN ANIMALS.

We may say with truth, that *feeling* is the universal sense of animals: it is the basis of all other sensations: for *seeing*, *hearing*, *smelling*, and *tasting*, cannot exist without *contact*. But as the *touch* operates differently in *seeing* from what it does in *hearing*, and in *hearing* from what it does in the other organs of sensation, we may therefore distinguish the sense of *feeling* properly so called, from that universal sensation which we have already noticed. Both are produced through the medium of the nerves. Of these anatomists reckon *ten* principal pair; they are like small cords or threads, and derive their origin from the brain: and are distributed through every part of the human body, even to the very extremities. Wherever there are nerves there is sensation: and wherever the seat of any particular sense is found, there also are nerves which are the general organ of that sense. There are *optic* nerves for the *eyes; auditory* nerves for the *ears; olfactory* nerves for the *nose; gustatory* nerves for the *tongue;* besides the nerves which minister to *feeling*, and which like that sense, are distributed over the whole body. All these nerves proceed from the spinal marrow, pass through the lateral openings of the vertebræ, and distribute themselves by innumerable ramifications to every part.

The nerves which minister to feeling are found also through all the organs of the other senses; for

these organs, independently of their own peculiar sensations, must be susceptible of feeling. Hence it is that the eyes, ears, nose, and mouth, receive impressions which depend entirely on *feeling*, and are not produced by their own particular nerves. That sensation is occasioned by the interposition of the nerves is indisputable; for every member feels more strongly in proportion to the number of its nerves: and feeling ceases where either there are no nerves, or the nerves are cut off. Incisions may be made in the fat; bones, nails, and hair may be cut off, without exciting any pain: or if we think we experience any, it is the mere effect of imagination. The bones are encompassed with a nervous membrane, and the nails are attached to places where there is a *plexus*, or tissue of nerves; and it is only when one of these nerves is irritated, that we feel the sense of pain. Therefore we cannot with propriety say *My tooth aches*; for as it is a bone it can have no feeling, but the nerve which is attached to it may feel pain when too much irritated.

Let us here admire the wisdom and goodness of God. In thus diffusing the sense of feeling over the whole body, he has evidently had our wellbeing in view. The other senses are situated where they may best accomplish their functions; and serve for the preservation of all the members. Now as it was necessary for the security and welfare of the body, that each part might be informed of whatever may be useful or injurious, pleasing or disagreeable to it; it was also necessary that the sense of feeling should be diffused

over the whole body. It is another proof of the Divine Wisdom, that several animals should have the sense of feeling in a more exquisite degree than men have, as that delicacy of feeling is necessary for their manner of life; and compensates them for the privation of some other sense. The horns of the snail for instance have the most exquisite sensibility; the least obstacle causes them to draw them in with the utmost readiness. How delicate also must the feeling of the spider be, when in the midst of that web which it has so ingeniously woven, it can perceive the least motion which the approach of other insects may occasion!

But without dwelling on the sense of feeling in animals, it will sufficiently excite our admiration if we consider this sense as it exists in man. How can the nerves (which appear to be only susceptible of less or more length, breadth, tension, and vibration) transmit to the soul so many different kinds of ideas and sensations? Can there be such a correspondence between the soul and body, that nerves of a certain determinate size, structure, and tension, should always produce certain sensations? Has each organ of sense, nerves so arranged and adjusted, so analogous to the corpuscles, or small particles of matter which emanate from bodies, that the impressions which they receive from them should be always followed with certain determinate sensations? It seems at least, that the pyramidal form of the nervous papillæ, which are the immediate instruments of taste and feeling, gives some probability to this conjecture. But our know-

ledge is too limited to decide on this point, and we are obliged humbly to acknowledge that this is one of the mysteries of nature which perhaps cannot be fathomed in this life.

Let us give God thanks, that with all the other senses which his goodness has bestowed upon us, he has also given us the sense of *feeling*. Of how many pleasures should we be deprived if our bodies had less sensibility! We could not then discern fully what would be advantageous to us, nor shun what would prove injurious. How well would it be if our souls had as lively a sense of what is excellent and honest, and as decided a taste for holiness as our bodies have for pleasure! This moral sense was in the beginning impressed on our souls: but alas! it is almost obliterated: and how deplorable must our state be if it be totally and finally lost! Great God! preserve us from so great an evil!

NOVEMBER VIII.

A RECOLLECTION OF THE BENEFITS WHICH WE HAVE ENJOYED IN SPRING AND SUMMER.*

COME my friends, let us feel and acknowledge the goodness of the Creator. Let us think with gratitude on the time we have spent in the bosom of joy; while exempt from inquietude and trouble, renewed nature

* This paper is all in verse in the German.

filled us with delight; when devotion followed us to the green bowers, and when even the shadow of sorrow disappeared from our habitations; when hand in hand we traversed the flowery paths, every where seeking and finding the Creator. When from the thick bush, whose foliage had invited the ærial songsters, their melodious notes reached our ears, while peace, friendship, and innocent joy abundantly heightened the pleasure. Smiling nature dealt out her flowers with a liberal hand; we breathed the balsamic odor of *roses*. The *pink* and the *wallflower* perfumed the air around us, and towards the evening of a fine day, the sporting zephyrs wafted us the sweetest exhalations on their airy wings. Then our souls felt a sweet transport; the opening of our lips was thanksgiving to the Lord, and under the rose-bushes we mingled our voices with the melodious concerts of birds.

Often when the gentle breeze had fanned the burning air of summer, and the birds felt themselves animated with new vigour; when the azure clouds of the sky became dissipated, and the ruler of the day promised us his favours, pleasure lent us wings, and we cheerfully left the noisy abodes of the city to seek the green shades vaulted by nature. There we were undisturbed; wisdom, piety, and innocent joy accompanied us to the rural retreat, where we went to admire nature. The bushes, shaken with the evening breeze, afforded us a delightful shade, and diffused a refreshing coolness around: and nature drew from unfailing springs the contentment which she pours into hearts that are pure. There, entirely given up to our

Creator, to nature, and to reflections on our own happiness, our eyes were bathed in tears of joy.

The songs of gladness which resounded from every part of the forest, turned our hearts to pleasure and gratitude. The joyous bleatings of the full-fed flocks, heard, at a distance, the melodious notes of the shepherd's pipe, the dull buzzing of the beetle which fluttered among the flowers; and even the hoarse and monotonous croaking of the frogs, warming themselves on the banks of the rivulet, all impressed our minds with joy, and gradually elevated our souls to the Cretor. There his supreme wisdom was manifested in the water, in the air, in the quadruped, the insect, and the perfume of flowers. A beautiful country, an emblem of that inhabited by our first parents, presented itself to our eyes. At a distance we perceived old and sturdy forests, and hills gilded by the rays o. the sun. The pleasing mixture of the most diversified colours, the rural flowers, the golden crops, the rich green carpet wrought by the hands of nature, the treasures of the meadows, and the sweet aliment of the herds and flocks, which yield us their wholesome milk: the food of man as yet hidden in the tender ear, all these were objects sufficient to excite a feeling heart to glorify the Creator, and celebrate his bounty.

There nature spread before us the majesty of her Author. The magnificent universe, we may justly say, is too beautiful to be the abode of inconsiderate, ungrateful man. For him the wings of the wind waft their refreshing breezes: for him the silver

stream murmurs along, when at mid-day he rests from his labours: for him the corn ripens, and the trees bear their fruit; all creation ministers unto *him*, yet HE is regardless of it!

But they who love their Maker, will discover in the breeze and in the brook, in the field and in the flower, in the spire of grass and in the ear of corn, the traces of his eternal wisdom: and to such, universal nature is the herald of his power. That God who created the angel, has also given being to the grain of dust. It is by him that the *mite* lives, and the *elephant*, the burden of the earth. At the sight of a blade of grass, as well as at the view of the aloe spike, a thinking mind will raise itself to the Creator; for the *sprat*, as well as the *whale*, proclaims the grandeur of the Most High. Examine his works and answer me; Is he not as great in the *breeze* as in the *tempest?* In the *drop* as in the *ocean?* In the *spark* as in the *starry firmament?* In the *worm* as in the *hypopotamus?* The vast creation is the sanctuary of God; the world is a temple consecrated to his glory; and man was appointed to be his priest in nature, and not the destroyer and tyrant of created beings.

NOVEMBER IX.

FOREIGN ANIMALS.

EVERY part of the world has animals peculiar to itself. And it is for very wise reasons that the Crea-

tor has placed some in one country rather than another. The most remarkable animals of the southern countries, are, the *elephant*, and the *camel*. In size they surpass all other quadrupeds. The elephant especially is like an animated mountain, and his bones are like pillars. His head is attached to a very short neck, and is armed with two kinds of weapons, with which, when necessary, he can even tear trees up by the roots. Had his neck been longer it could not have supported the weight of his head, nor have kept it up. But to make amends for the shortness of the neck he has a very long *trunk*. This he uses as a hand to carry his food to his mouth, without being under the necessity of stooping. He can not only move, bend, and turn this in all directions, as we do our fingers, but use it also as an organ of sensation; and it may be properly said of this animal, that he has his nose in his hand. His eyes are small in proportion to the size of his body: but they are bright, and full of fire; and in them may be seen all his inward sensations and emotions. In his natural state the elephant, though wild, is neither sanguinary or ferocious: he is of a gentle disposition, and uses his weapons only in his own defence. If he be not provoked he does harm to no person: but he is terrible when irritated: he seizes his adversary with his trunk, jerks him like a stone, and then treads him to death. The elephant eats a hundred pounds of grass in a day; but his body being of an enormous weight, he bruises and destroys ten times more with his feet than he uses for food. His principal enemy, and often his conqueror, is the *rhi-*

noceros, an animal resembling the wild boar, who uses the horn on his nose to tear up the belly of the elephant.—It requires but little attention to discover the wisdom of God in the formation of the elephant: he causes it to be produced in a country abounding with grass; and he has taken care that it shall not become a burden to the earth by multiplying too fast, for the female goes *two years* with young, and does not couple with the male till *three years* after.

The *camel* is one of the most useful animals of the East. It is admirably adapted to bear the greatest fatigues among dry deserts and burning sands, as it is able to go four or five days without drinking, and requires but little food in proportion to its size. It crops the few plants and shrubs which grow in the desert; and when it can find none, about two quarts of beans and barley will suffice it for a whole day. Besides the hunch on its back, there is still another singularity in its make. It has two gullets: one terminates in the stomach, and the other in a kind of bag, which serves it as a reservoir to keep water in. Water continues in it without putrefaction; and when the animal is thirsty, or has occasion to moisten its dry food, or assist it in ruminating, it throws up a portion of the water even to the œsophagus, which having moistened the throat, descends afterwards into the stomach. The ordinary load for a camel is from seven to eight hundred pounds weight: with which it can travel several miles in an hour; and continue for twelve or fifteen hours each day. The fleshy hoofs of the camel are

made for walking in the sands; whereas the horny hoof of the horse would be hurt or burnt by them.

The most remarkable animals in the northern countries are the *elk*, the *sable*, and the *reindeer*. The first of these animals is large, strong, and well-shaped. His head pretty nearly resembles in colour, shape, and size, that of the mule. His limbs are long and strong: his hair of a light grey. This animal is simple, stupid, and timid. He finds proper food every where, but prefers the bark and young shoots of the *willow*, *birch*, and *service* tree. He is exceedingly swift; and his legs being very long, he can pass over a great deal of ground in a short time.

The *sable* wanders in the forests of *Siberia:* and is very much prized on account of its beautiful fur. The hunting of this animal is generally the doleful occupation of the poor wretches who are banished to the deserts.

The *reindeer* is an animal of a pleasing and elegant shape, nearly resembling the stag. It seeks its own food, which commonly consists of moss, grass, leaves, and buds of trees. The inhabitants of the North derive the greatest advantages from it. They eat its flesh, drink its milk, and yoking it to a kind of sledge, are drawn by it with incredible swiftness over the ice and snow. All the wealth of the Laplanders consists in their reindeers. The skin furnishes them with clothes, beds, coverings, and tents: in a word, they derive from this animal all the necessaries of life.

What has been said of these foreign animals may give rise to important reflections. How prodigious is

the distance between the *elephant* and *mite!* And what a wonderful variety in the outward form of animals, in their shape, their organs, senses, motions, and manner of propagating their species: nevertheless every thing is perfectly adapted and proportioned to the manner of life appointed them. But as there are animals in different parts of the world which could not accommodate themselves to the air, climate, food, and temperature of European countries; so there may be millions of animals which could not exist on our globe, and which could no more live among us than we could in *Saturn* or *Mercury*.

O God! Thy empire is unbounded. Thou wouldest realize all kinds of life and all possible happiness: and this plan so worthy thy goodness, thou hast executed with infinite power and wisdom. May thy name be praised for ever and ever!

NOVEMBER X.

VARIETY OF WINDS.

THERE is a great variety of winds. In some places they are constant during the whole year, and always blow in the same direction: in other places they change at particular times, but always according to regular and fixed laws. In the open sea, between the Tropics, and some degrees beyond them, there is an *easterly wind*, which continues the whole year without any considerable variation. To the North of the

Variety of Winds.

Line the wind blows towards the *north-east*, and to the South of the Line it blows towards the *south-east*, more or less, according to the position of the sun. But this should be understood of the wind that prevails in the open sea: for islands and great continents which are in its way may alter its direction, and cause it to become *north-east* in certain places. In the southern parts of the ocean, the wind is generally *westerly*. The nearer the coast the more it varies; and it is still more so on land. The constant east wind is chiefly owing to the heat which the sun communicates to our atmosphere. In the Indian sea there are winds called *Monsoons*, or *Trade-winds*, which blow in the same direction for three or six months together, and then change and blow in the opposite direction for the same length of time. The cause of these winds has not yet been accounted for in a satisfactory manner: but certainly we must look for it in the variations of heat and cold, in the position of the sun, the nature of the soil, the inflammation of meteors, the condensation of the vapours into rain, and otheir similar circumstances. There are both seas and countries which have winds and calms peculiar to them. In *Egypt*, and in the *Persian Gulf*, there prevails often during the summer a scorching wind, which prevents respiration, and consumes every thing. At the *Cape of Good Hope* a cloud is often seen which is called the *Fatal Cloud*, or *Ox Eye;* it is at first very small, but visibly increases, till in a short time a furious tempest proceeds from it, which oversets ships, and plunges them into the depth of the sea.

Variety of Winds.

Variable and constant winds, which have no determined duration or direction, prevail over the greater part of the globe. It is true that certain winds may blow more frequently in one place than in another: but this is not at fixed times: and they begin and end without any kind of rule. They vary in proportion to the different causes which derange the equilibrium of the air. Heat and cold, rain and fair weather, streights, capes, and promontories, may contribute much to interrupt their course, and alter their direction. There are doubtless many other causes of the different modification and alteration of the air which are as yet unknown.

One thing particularly remarkable, and which always happens in almost every place, is, that a little before sunrise, when the air is perfectly calm and serene, just at the dawn there is a quick easterly breeze, which begins at the approach of the sun, and continues for some time after he is risen. This undoubtedly proceeds from the air being warmed by the rising sun; and being rarefied, it drives the contiguous air easterly: this necessarily produces an east-wind, which ceases afterwards in proportion as the air around us becomes warm. For the same reason the east-wind must not only precede the sun in the *Torrid Zone*, but also be much stronger than in our regions, because the action of the sun is more moderate with us than in the vicinity of the *Line*. In the Torrid Zone the wind blows almost constantly from East to West; there a west-wind very rarely happens.

We see then that the winds are not the effects of

chance; to which neither cause nor design can be attributed. In these, as in all other things, the Creator manifests his wisdom and goodness. He has so arranged every thing, that the wind blows from time to time, and an absolute calm very rarely occurs. He regulates the motion, strength, and duration of the winds, and he prescribes the race which they are to run. Even their variety is very advantageous: when a long drought has caused both plants and animals to droop, a wind from the sea-coast laden with many vapours, waters the fields and revives nature. When this design is accomplished, a dry wind proceeds from the East, restores serenity to the air, and brings back fair weather. The north-wind brings with it a great number of icy particles, and drives away the noxious vapour of the autumnal air. Lastly, to the keen north-wind the south wind succeeds, which coming from southern climates, impregnates the air with a reviving warmth. By these continual variations fertility and salubrity are maintained on the earth.

Who can make these reflections without adoring God? All the elements are in his hand, and his powerful word irritates or appeases them. When he commands, storms and tempests roar; they rush from sea to sea, and from land to land: and at his bidding serenity is again restored. Should we not then be satisfied with our lot, seeing all our concerns are in his hand? Cannot he who directs the winds regulate also my lot? Seeing that all the variations of the winds concur at his command to promote the general welfare of his creatures, cannot he cause every occur-

rence in life to contribute to my present and eternal welfare?

NOVEMBER XI.

THE CHASE.

HUNTING is one of the principal amusements of a certain class of men at this season; but it were to be wished that less importance were attached to it. For the dominion which man has over animals, and the pleasure he takes in subduing them is frequently mingled with cruelty. Sometimes indeed the death of certain animals is necessary, in order to make that use of them for which they were designed; or to prevent them from multiplying so as to become injurious: but even then we should kill them in the gentlest manner possible: but unfortunately this law of nature is very little attended to by the majority of sportsmen. Men in this respect shew themselves more sanguinary than the most ferocious beasts. Is not the mode of *hare* and *stag-hunting* shocking to every feeling heart? Can it be an innocent pleasure to pursue with implacable fury an innocent animal which flies before us in mortal anguish, till at length, worn out with terror and fatigue, it falls groaning, and expires in the most horrible convulsions? Can human nature be unaffected at such a sight? Can man behold this without some compassionate emotion? To purchase pleasure by the death of an innocent creature, is to purchase it too

dearly. It is a dangerous pleasure which habituates men to ferocity and barbarity: for it is impossible that the heart of a man passionately fond of hunting, should not sensibly lose the soft feelings of humanity. Such a person soon becomes cruel and sanguinary: he finds no pleasure but in scenes of horror and destruction; and being accustomed to be insensible towards animals, he soon becomes so toward his fellow-creatures. Hunting does not appear to me to be an occupation which we can reconcile to the great duties we are called to fulfil. Without speaking of the loss of time, a loss in itself of great consequence, it is certain that hunting distracts the mind, and fills the imagination with ideas which are by no means compatible with serious occupations. Gentler amusements are more proper to divert and unbend the mind, than these turbulent pleasures, which almost deprive the soul of the use of reflection.

Hunting must ever appear a suspicious and dangerous employment to every moral and religious man. For ought we not to be afraid of a pleasure which gives place to so many irregularities and sins? How much must the health suffer in such a violent exercise, and in such sudden transitions from heat to cold? What excesses, what cruelties, what oaths do such persons indulge themselves in! How are the horses, the dogs, and even the men treated! What mischief is there done to corn-fields and pasture ground! Can all these evils be considered only as trifles which deserve no attention and may be practised without scruple?

Were we wise we should seek more pure and inno-

cent pleasures, and surely such may be easily found. We have only to look around us, and we shall every where discover pleasing objects well calculated to afford us the greatest satisfaction. Heaven and earth, the arts and sciences, labour, our senses, the conversation of our friends; in a word, every surrounding object invites us to the enjoyment of pure pleasure. Why then should we run after gross and violent pleasures, which never fail to leave disgust and remorse behind them? We have within ourselves an abundant source of enjoyments: a multitude of intellectual and moral faculties, the cultivation of which may every moment give us some new satisfaction. But it is in this alone that the great science of a Christian and philosopher consists. Such have the art of being happy without much outward appendages or great expence. And they can always be so without risking their virtue.

NOVEMBER XII.

DREAMS.

THE inactivity of our soul during sleep is not so complete as to leave the faculties unemployed. We have ideas and representations, and our imagination is continually at work. This is the case when we dream. However the soul has but little share in them, except so far as relates to the memory: and perhaps this faculty belongs rather to the animal than

to the rational soul. If we reflect upon our dreams, and examine why they are so irregular and unconnected; why the events which they represent to us are so fantastic, it will be found that this proceeds chiefly from our being more affected by *sensations* than by *perceptions*. Our dreams represent to us, persons whom we have never seen, or who are long since dead: we see them as alive, and associate with them, things which actually exist. If the soul acted in dreams as it does when we are awake, a moment would be sufficient to set these unconnected and confused ideas in order. But commonly its attention is confined to the receiving and following the images which present themselves to it. And although these objects appear in the strongest light, yet they are always fantastically associated, and have no regular connection; for sensations succeed each other without the soul's combining or putting them in order. We have then *sensations* only and not *notions*, for notions can only take place when the soul compares sensations, and operations on the ideas which it receives through the medium of the senses. Thus dreams are formed in the inferior faculties of the soul; they are not produced by its own energy, and can only appertain to the animal memory.

It is very singular, that in dreams we never imagine we *hear*, but only *see*. It is still more remarkable that the images which we see are perfectly like their originals. It seems as if the soul of a painter only could draw such true and regular pictures: nevertheless these designs, however exact they may be, are execut-

ed in dreams by persons who have no idea of the art. Beautiful landscapes which we have never attentively observed, present themselves to us in dreams as true and exact as if done by the most eminent artists.

As to the accidental cause of dreams, by which former sensations are renewed without the assistance of any present and real impression, it ought to be observed, that in a state of profound sleep we never dream; because all our sensations are extinct, all our organs are inaccessible, every thing sleeps, the internal as well as the external senses. But the inward sense which falls first asleep, is the first that wakes, because it is the most lively and active, and may be more easily excited than the outward senses. Sleep is then less perfect and less sound, and this is properly the time for dreams. Former sensations, especially those on which we have not reflected, revive. The internal sense, which through the inactivity of the external senses, cannot employ itself on present impressions, is taken up with, and operates on preceding sensations. It acts in preference on those by which it was most forcibly affected; and hence it is, that the greater part of our dreams are either excessively frightful or extremely pleasant.

There is another circumstance in dreams worthy our observation; they are the image of the character of the man. From the phantoms which occupy his imagination during the night we may conclude that he is virtuous or vicious. A cruel man continues to be so even in sleep; and a benevolent man is even then occupied with his mild and benign dispositions. It is

however true, that an impure or vicious dream may be occasioned by the state of the body, or by external and accidental circumstances: but our conduct as soon as we awake will prove whether these dreams may be imputed to us or not: we need only attend to the judgment we then form of them. A good man does not consider his dreams with indifference: for if during his sleep his mind deviates from the rules of justice and purity, he is affected for it when he awakes. It is certain that a soul which goes to rest with a lively sense of the favour of God, scarcely ever fails in its dreams to have ideas and representations of heavenly things. A good conscience often comforts a holy man in his sleep, through the blessed knowledge he has of the Divine favour.

But sleep is not the only time when fantastic and unconnected objects confuse and disorder our imagination; how many people are there who dream while awake! Some have an extravagant idea of themselves, because fortune or favour has raised them to places of rank. Others make their happiness to consist in empty fame, and feed on the chimerical hope of immortality. Intoxicated with passion and vain hope, they dream that they are happy; but this frivolous and deceitful felicity vanishes like a morning dream. Persons of character have been well described by the prophet: *They resemble,* says he, *the hungry man who dreams that he eats, but he awakes and his soul is empty: they are like the thirsty man, who dreams that he drinks, but he awakes and behold he is faint, and his soul hath appetite.* Isa. xxix. 8. Let us never seek

our happiness in vain phantoms, or deceitful dreams! Let us entreat the Lord to grant us that wisdom which will direct us to aspire after solid and permanent good; after a glory that fadeth not away, which will occasion no tears of remorse when at the hour of death we come to reflect on our past life.

NOVEMBER XIII.

THE UNIVERSE IS CONNECTED TOGETHER, AND EVERY PART CONCURS TO THE PRESERVATION AND PERFECTION OF THE WHOLE.

EVERY thing which the beneficent Creator has produced on our globe is admirably connected with another, and contributes to the mutual preservation of the whole. The earth itself, with all its rocks, minerals, and fossils, owes its origin and continuance to the elements. Trees, plants, grass, and mosses; in a word, all vegetables derive their nourishment from the earth; whilst the animals in their turn feed on the productions of the vegetable kingdom. Afterwards all these return to their first principles. The earth nourishes the *plant*, the *plant* the *insect*, the *insect* the *bird*, the *bird* the *wild beast;* and in its turn the *wild beast* becomes the prey of the *vulture;* the *vulture* of the *insect;* the *insect* nourishes the *plant;* and the *plant* becomes *earth*. Even man, who makes use of these things, often becomes their prey in his turn. Such is the circle in which all things here below revolve.

Thus all beings have been created for each other, and nothing for itself alone. *Tygers, lynxes, bears, ermines, foxes,* and other animals provide us with furs for our covering. *Hounds* traverse the forests and pursue the *hare* and the *stag* to furnish our tables, and the part which they receive of the prey is very little. The *ferret* drives the *rabbit* from its deepest recesses into our hands. The *horse,* the *elephant,* and the *camel* are trained to carry burdens, and the *ox* to draw the plough. The *cow* gives us her milk, the *sheep* its wool; the *reindeer* makes the sledge fly over the snow and ice: the *swine,* the *hedgehog,* and the *mole* dig up the earth that the seeds of plants being dispersed abroad may take root the more easily. Even the *hawk* preys for our table, and the *hen* gives us her eggs. The *cock* awakes us to our work, and the *lark* amuses us with her songs throughout the day. The warbling of the *blackbird* is heard from morning to evening; and the melodious accents of the *nightingale* charm us during the night. The superb plumage of the *peacock* delights our eyes. *Fish* come from the depths of the ocean, throng our coasts, and swim in our rivers, to furnish men, birds, and beasts with abundance of nourishment. The *silkworm* spins that we may clothe ourselves with its precious web: *bees* with indefatigable diligence collect the honey which we find so delicious. The *sea* casts multitudes of *crabs, oysters,* and all sorts of shell-fish on our coasts, for the supply of men and other animals. The *lantern-bearer,* or great fly of *Surinam,* shines through

the darkness to enlighten the inhabitants of those countries.

If we examine the different occupations and labours of men, we shall find that they also tend to the same end which nature has proposed. The *mariner* tempts the dangers of the sea, and braves the storm to bring merchandizes which do not belong to him to the place of their destination. The *soldier* sacrifices his blood for his country and the welfare of his fellow-citizens. The *lawyer* is only employed in other people's suits. *Sovereigns* and *magistrates*, who are at the head of government, consecrate their time and talents to the good of the commonwealth. *Parents* lay up treasures for their children. The *husbandman* sows and reaps, yet consumes but little of the produce of his own labour. Thus we live not for ourselves alone; for the Divine Author of nature has so ordered it, that all beings should become useful to each other. Let us learn from this what our mutual duties are. The strong should succour the weak. The man of understanding should help others with his advice. The learned should instruct the ignorant. In a word, we should love our neighbour as ourselves, and thus fulfil the designs of the Creator. These reciprocal offices which men owe to each other, have induced them to form societies. That which divided force could not effect, is easily accomplished by united energy. No person could build a beautiful edifice, nor construct a palace, were he obliged alone to lay the foundation, dig the cellars, mould and burn the brick, raise the walls, put on the roof, make the windows, decorate

the apartments, &c. But all these are easily performed by a number of workmen who mutually assist each other. Such is the invariable law of nature, that in all arts and sciences nothing of importance can be brought to perfection without the concurrence of several persons. How many thousands of men are requisite to make one monarch powerful, an empire happy, or a nation famous and flourishing!

How evident is the wisdom of the Creator in all this! That the inhabitants of our globe, and particularly men, might be happy, he has established such connections and relations among all beings, that the one cannot subsist without the other. Experience must teach us that God has the welfare of his creatures continually in view. The whole world was planned for this purpose; and all its parts concur to the happiness of mankind. Even the things which appear to be of the least importance, and which we scarcely condescend to look at, contribute their part also to render us happy. The very insects which are so despicable in our eyes, are of great use to us. Thousands of hands are daily employed in our behalf. How many animals lose their lives in order to support ours! And in how many other ways of which we are ignorant, is nature active in our favour! Kind and indulgent Father! Teach us how to appreciate thy goodness and our own happiness! And may we henceforth be inspired with the resolution to employ all our strength in thy service, who hast condescended to do so much for us!

NOVEMBER XIV.

COMMON SALT.

THE seasoning most extensively used, and what the rich and the poor, the king and the beggar cannot do without, is common salt. Its savour is so pleasing, and it has such excellent properties for digestion, that we may consider it one of the most precious presents which nature has bestowed on man. It is given to us in different ways. The inhabitants of the coasts get it from the sea. They dig pits on the shore which they call *Salt-pits*, and plaster them with clay: the sea flows into them when it is rough; the water detained by the pits evaporates by the heat of the sun, and a great quantity of salt remains at the bottom. In other places nature produces salt springs, fountains, pits, and lakes. To extract the salt, the water is evaporated in large pans or caldrons set over the fire. In some other places, salt is found in solid masses in the mountains. The most famous salt mines are those of *Catalonia* and *Poland*. These different kinds of salt are all alike in their chief properties. Experience teaches us, that salt dissolved in the stomach and intestines has a digestive power, prevents putrefaction, and the too great fermentation of the aliments. Hence it is, that it is used internally to restore and promote digestion, to remove crudities from the stomach, to increase the appetite, and to prevent costiveness. It not only dissolves phlegm and the viscosities which hurt digestion and destroy appetite, but it is also a very excellent stimulant for the stomach; the nerves of

which it gently irritates, and assists all its operations. Common salt is therefore an excellent digestive, and perhaps the best in the whole economy of nature. Other salts act too powerfully, or are too unpleasant to the taste to be mixed with our food. But common salt acts gently, assists the concoction of all eatables, and prevents that putrefaction to which they are naturally disposed.

Salt is then an especial blessing which we do not sufficiently esteem, because it is common. Let us pay more attention to it, that we may be excited to that gratitude which so precious a gift requires. Were we to attend more to the daily blessings which we receive from the Lord, what causes should we find to acknowledge and celebrate his goodness! Let us sanctify the use of aliments with such reflections. The greater part of our food would be flat and insipid were we deprived of salt, which greatly increases its flavour and the pleasure we receive from it. But this is the smallest part of its advantages, seeing it is of the utmost consequence to our health, as we have already noticed. What a blessing it will be, should this meditation lead us to prize this gift of God better than we have yet done! Our hearts will become more and more established in gratitude and obedience when we accustom ourselves to reflect on the blessings which we receive from the hands of our great Benefactor.

In another point of view salt must be interesting to every observer of the works of nature. The smallest particles of our common salt seem as if they were all exactly cut into eight angles, and six sides like a *die:*

hence it must happen, that most masses of this sort of salt will be of a square or cubic form. Here again the hand of the Most high is visible, which has given salt an invariable form, and has cut all its masses after the same model since the beginning of the world. This figure, always regular, and ever the same, is a proof that it owes not its origin to chance or fortuitous motion, but to the will of an Intelligent Being. This thought is too important, too necessary for our peace to be disregarded: we should seize every opportunity of recollecting it, and endeavour to have it more and more deeply impressed on our minds.

NOVEMBER XV.

THE ORIGIN OF FOUNTAINS.

All great rivers owe their rise to a number of rivulets; rivulets are formed by brooks and streams; and these owe their origin to springs and fountains. This is incontestable. But whence come the springs? As water, by its gravity, always occupies the lowest parts of the surface of the earth, whence then can the water come which constantly flows from the most elevated regions?

In the first place, it is certain that rain, snow, and in general all the vapours which fall from the air, furnish a great part of the water which flows from springs. It is on this account that fountains and rivers are in *Arabia Deserta*, and other parts of Africa, where it

scarcely ever rains. These waters soak into the earth, and penetrate it till they meet with beds of clay through which they cannot pass. Here they accumulate and form fountains: or else they collect in cavities or grottos, which afterwards overflow, or the water leaks out from thousands of crevices, great and small, and endeavours to descend to the lowest places, whither its gravity naturally carries it. Thus the water runs incessantly, and forms subterraneous currents, which uniting with similar ones, form what is termed a vein of water. It is nevertheless very likely, that in certain countries at least, fountains do not owe their origin to the rains only which fall from the atmosphere, for we sometimes find considerable springs and lakes on high mountains, which could not, as far as we can judge, be formed by rain or snow alone. There are many springs which in all seasons give the same quantity of water; and sometimes furnish even more in times of great heat and drought than in moist and rainy seasons. We must therefore conclude, that there are other causes both for the origin and maintenance of fountains.

Many springs seem to come from vapours, which being suspended in the atmosphere, are driven by currents of air towards mountains and elevated places: or by the power of universal attraction are drawn towards these great masses. The atmosphere is, more or less, laden with aqueous vapours, which being driven and pressed against the hard cold rocks condense into drops, and thus swell the springs. Yet still we must grant that all springs cannot owe their rise to the above

causes: for would not the *Danube* and *Rhine*, and other rivers which come from high mountains be dried up in winter, when these enormous masses are converted into snow and ice? Therefore caverns which communicate with the sea and with lakes, must contribute something to the origin of fountains.

The sea-water having gone by subterraneous canals into these great cavities, rises in vapours through a multitude of chinks and forms drops, which falling down by their own gravity often find another path; because water cannot always penetrate where vapours do. Perhaps also the sea-water, especially in countries contiguous to the ocean, is filtered through beds of earth, by which certain springs are produced. These springs have generally a taste similar to the water to which they owe their origin. But the springs which are found on the tops of mountains cannot owe their rise to this cause; for the sea-water cannot rise so high: and supposing it could, the springs would be neither sweet nor potable.

All the causes which we have already mentioned contribute more or less to the formation of fountains: but there may be other causes which are still unknown. It is true, that nature is ever simple in her operations, but that simplicity does not consist in employing only one cause for each particular effect: it consists in using the fewest causes possible; which do not prevent the presence of a number of auxiliary causes, which may concur to produce the effect which nature has proposed.

But though this may be otherwise, and though the

origin of fountains were yet more dubious and obscure than it really is, we must still acknowledge God as the Creator and Preserver of those salutary springs. "God speaks and the fountains spring from the bosom of the mountains: springs become rivulets, and rivulets swell in great rivers, which carry with them abundance and fertility wherever they go. The inhabitants of the country quench their thirst at them, and seek the cool refreshing shade of the woods through which they run. They murmur through the forests, and the wild beasts drink of their waters and rejoice in them." It is God therefore, who causes these beneficent fountains to spring from the high places of the earth: sometimes they glide and wind among the mountains, at other times they precipitate themselves in cataracts from lofty eminences, being increased by atmospheric vapours, or the union of different streams. By this wise arrangement, God maintains in the kingdom of nature that continual circulation of brooks, rivulets, and rivers which contributes to the fertility of the earth, the salubrity of our dwellings, and the draining of waters, whose too great abundance might become injurious.

NOVEMBER XVI.

HUMAN HAIR.

LET us examine the hair which covers our heads, its wonderful structure, and its various uses, and we

shall find that it is not only highly worthy of our attention, but that very sensible traces of the power and wisdom of our Creator are easily discernible in it.

Every complete hair appears to the naked eye, an oblong slender filament, with a knot or bulb at the root, which is generally thicker and always more transparent than the rest. The filament is the body of the hair, and the bulb is its root. The largest hairs have their root, and even a part of the body enclosed in a small vessel or capsule, formed by a thin membrane. The size of this sheath is in proportion to the size of the root: but the sheath is always a little wider that the root may not be too much compressed. In such a sheath, the root of the hair is always found. The root has two parts; the one external, the other internal. The outward part is a pellicle composed of little laminæ, the inward is a glutinous fluid in which some fibres are united; this is the marrow of the root. From the outward part of the root, there grows in general five, very rarely six, little white threads, exceedingly fine, transparent, hard, and often twice as long as the root. Besides these filaments we see other little bulbs rising here and there, but they are viscous, and easily dissolved by heat. The main body of the hair springs from the interior part of the bulb: it is composed of three parts; the exterior sheath, the interior tubes, and the marrow.

When the hair comes to the pore of the skin through which it is to pass, it is strongly enveloped in the pellicle of the root, which then forms a very small tube. The hair pushes the cuticle before it which serves as a

sheath to protect it in the beginning, while it is still soft and tender. The rest of the sheath or covering of the whole hair is of a particular substance; it is transparent, and especially so at the point. In young hair this coat is very soft, but it afterwards becomes so hard and elastic, that it shrinks back with some noise when it is cut. This sheath or coat preserves the hair a long time. Just under the coat there are many little fibres which extend along the hair from the root to the point. They are united among themselves, and with the sheath which is their common covering, by several elastic filaments: and this bundle of fibres forms a tube filled with two substances, the one fluid, the other solid, which together constitute the marrow of the hair.

An attentive observer of the works of God, will acknowledge the divine wisdom in the admirable structure of a hair, as well as in the other parts of the human body. Thus, from the crown of the head to the sole of the foot, there is nothing in man which does not proclaim the perfections of the Creator. Even those parts which seem of least importance, and which might be given up without inconvenience, are nevertheless of great importance, if they be considered in their connection with the other members of our bodies, or in their wonderful structure and use. This may be asserted particularly in regard to the hair. How many are there who consider it an object worthy of no attention, and who never think they can discover any traces of the wisdom and goodness of God in it! But besides, that in general, there is no part of our body

without its particular appointment and use, it is very easy to discern the wise purposes for which the hair has been given us.

And first, it is evident, that it contributes much to the beauty and ornament of the face. But this is probably its least use. The hair manifestly defends the head, and preserves it from cold and damp; and keeps the brain in its natural state of warmth. It certainly promotes a gentle and insensible evacuation of some humour from the body, helps perspiration, and discharges from the head and other parts those superfluous humours, which would otherwise accumulate there. The hair may answer several other purposes which are as yet unknown to us. But it is sufficient to know some of the purposes which God has designed to accomplish by it. A proper consideration of these must excite us to acknowledge and adore the power, wisdom, and goodness of our Great Creator.

NOVEMBER XVII.

THE SYSTEM OF THE WORLD.

HITHERTO we have been considering the earth, which is but a point in comparison of the system of the Universe. Let us now raise our thoughts to innumerable worlds, at the sight of which this point which we, and millions of other creatures inhabit, will be eclipsed, and appear as nothing. Let us examine, meditate, and adore.

System of the World.

The Sun, which gives life to all, is nearly in the centre of the system; and without changing his place, turns round its own axis from West to East in about 26 days. Round the Sun, in oblong or eliptic circles, all the planets move, from *Mercury* to the *Georgium Sidus*, or planet *Herschel*.

Mercury (who is the nearest to the Sun of all the planets) performs his revolution in 87 days, 23 hours, and 25 minutes: but by reason of his nearness to the Sun, he is generally buried in his rays, and therefore seldom visible.

Venus describes a greater elipsis; and finishes her revolution in 224 days, 16 hours, and 49 minutes.

The *Earth* performs her revolution in 365 days, 5 hours, and 49 minutes, what we commonly term a *year*: and the *Moon* finishes her's in the same space of time.

Mars finishes his course in 686 days, 23 hours, and 30 minutes.

Jupiter and his four moons, in about 4332 days, and 8 hours; nearly about *twelve* of our years.

Saturn and his seven moons or satellites, employs 10,761 days, and 14 hours, in running his immense circuit; a space of time answering nearly to *thirty* of our years.

Last of all comes the planet *Herschel*, or *Georgium Sidus*, with his six moons; which as far as our discoveries have reached, is the most distant in the solar system: he performs his revolution in 30,445 days, upwards of *fourscore* of our years.

But is even this immense circuit the boundary of

the universe? No, certainly: far beyond the orbit of *Herschel* is the region of the fixed stars, the nearest of which is at least 400,000 times further from the Earth than the Earth is from the Sun; although his mean distance from us is not less than 95 millions of miles, or 23,799 semidiameters of the Earth! And how many globes may there be in the vast space which separates *Herschel* from the fixed stars which we cannot discover!

But is it possible that the Sun which appears to traverse the half of the sky in twelve hours, should nevertheless be a fixed point in the centre of the universe? Do we not see it in the morning in the East, and in the evening in the West? And can the Earth move continually about the Sun without our perceiving it?

This objection, founded on the illusion of our senses, is really of no weight. Do we perceive the motion of the boat when we are gliding down a river? And when we are in a boat, or in a carriage, does not every surrounding object seem to move and pass in a contrary direction to that in which we are going, though they are all fixed and immoveable? However our senses may deceive us in this respect, our reason is obliged to acknowledge the truth and wisdom of that system which supposes the revolution of the Earth. Nature acts always by the shortest, easiest, and most simple ways. By the motion of the Earth round the Sun, we can account for the different appearances of the planets, their periodical rotations, their being stationary, and their direct and retrograde motions.

And is it not much more natural and easy that the Earth should turn round its own axis in twenty-four hours, than that the Sun, the planets, and the whole starry heavens should be carried round the Earth in that space of time? An incontestable proof that the Sun is in the centre of the system, and not the Earth is; that the motions and distances of the planets have respect to the Sun, and not to the Earth. And were we to suppose the contrary, what would become of the harmony and perfect conformity which prevail in all the works of the Creator? But according to our hypothesis, every plant has the same kind of motion which we attribute to the Earth.

These reflections on the system of the universe, are exceedingly proper to fill our minds with the most sublime ideas of our adorable Creator, and to give us a lively sense of our own littleness. With what pleasure does our mind pass from one idea to another, till it is lost in the contemplation of these sublime objects! With what emotions of astonishment and veneration do we perceive the grandeur of our God! It is true, that an exact and perfect knowledge of the system of the world cannot be attained by our limited understanding; but we know enough of it to be convinced, that the whole is arranged with infinite wisdom and goodness; and that no system can be imagined more beautiful, more worthy of the Infinite Being, or more advantageous to the inhabitants of the different globes.

NOVEMBER XVIII.

LOBSTERS.

THOUGH lobsters were of no use to us as food, they would nevertheless be worthy our attention. The females of these crustaceous animals have, a few weeks ago, undergone a great change. They have cast off their old coverings, and clothed themselves with new shells. This may be termed their *moulting*. In thus changing their covering they increase in size, and this mode of growth is common to all crustaceous insects: they increase in size as often as they cast off their old coverings; and this operation is very painful. At the time they change their shell they change their stomach and intestines also: indeed they seem to feed upon their former stomach, which wastes by degrees, so that the animal appears to nourish itself with those parts of its body which served it before for digestion. The little white round stones, improperly called *Crabs'-eyes*, begin to be formed when the stomach is destroyed, and are afterwards enclosed in the new one, where they gradually diminish, till at last they wholly disappear. There is reason to believe, that the animal uses them as a remedy for the disorders of its stomach: or probably they are the receptacle for the matter which is employed in the formation of the new shell.

Except at the time of casting their shells, these animals keep at the bottom of the water, a little distance from the shore. In winter they prefer deep water; but they come to the shore in summer, if the want of

food does not oblige them to go deeper into the sea. That they may easily seize their prey, nature has given them several arms and legs. Some of their claws are often as large as their head and body together. What is most remarkable is, that they have the faculty of reproducing their claws and horns when they have been bruised or broken. They can even rid themselves of them when they are inconvenient. They perform this operation in any posture; but they effect it more easily when turned on their back; and the shell is broken with strong iron pincers, and the flesh bruised at the third or fourth joint of the claw. Immediately after the wound the animal is convulsed; the pain causes it to shake its limb every way; and shortly the wounded limb falls off from the body, and a gelatinous humour oozes out and staunches the blood: when this is taken away the animal bleeds to death. This substance envelops what may be termed the bud of the new limb; which appears at first only as an excrescence, or small cone. By degrees this cone lengthens, assumes the form of a limb, and becomes as complete as the old one.

The manner in which these animals multiply is not less extraordinary. The male carries the prolific substance in an extremely long thread. What principally distinguishes it is a double hook under the tail, which is not found in the female. These animals grow pregnant about autumn; if a female be at that time opened, red clots may be perceived, which are the evidences of impregnation. They gradually disappear; and under the tail, where the female has many little

fibres, a multitude of little round eggs may be seen, exactly resembling those in the *rowe* of a herring. The first eggs appear in December, and are more than a hundred. They grow large in proportion to the increasing warmth; and before St. John's-day, we find little living lobsters among the eggs about the size of an ant, which continue attached to the fibres under the mother's tail, and are there fostered till all the eggs are hatched. At length they disengage themselves from these fibres, and then cling to those of trees or plants near the shore, and there continue till they are strong enough to commit themselves to the deep.

The *lobster* is certainly one of the most extraordinary creatures in the world. An animal whose skin is stone, which it casts off every year to cover itself with new armour. An animal whose flesh is in its tail and feet: whose hair is within its breast: whose stomach is in its head, and which is changed every year for a new one; the very first office of which, is to digest the old one! An animal which carries its eggs within its body before they are impregnated, but as soon as this takes place, carries them without under its tail; and which multiplies its kind with a double organ of generation! An animal with two stones in its stomach, which are engendered and grow there, and with which it feeds itself till they are consumed! An animal which can cast off its limbs at pleasure when they are troublesome, and replace them with others! And lastly, an animal whose eyes are placed on long moveable horns! So singular a creature will long remain a mystery to the human mind. It furnishes us how-

ever with new motives, toacknowledge and adore the power and wisdom of the Creator.

NOVEMBER XIX.

THE CONVENIENT AND ADVANTAGEOUS SITUATION OF ALL THE PARTS OF THE HUMAN BODY.

If we examine our bodies with due attention we cannot but observe, that all the parts of which it is composed, are so situated as to be most convenient, and best adapted to their various uses. It belonged to the Creator to arrange them as he thought proper: and his wisdom has assigned to each member its proper place; and in forming our bodies he has taken care not only to provide for its wants and conveniencies, but also for its beauty and ornament.

In the first place, with regard to our *wants;* it is manifest, that all the parts of our body are situated in the most advantageous manner. Our body is a machine, which is to move of itself by the powers given it, without receiving any impulse from any exterior force. It is necessary it should speedily, and with facility perform the will of the mind. All the bones are joined together: but that we might make use of our limbs without difficulty, stretch out or bend the arm, stoop or erect ourselves as we please, the bones are divided into many articulations, and each is rounded at the end, and inserted in the spheric cavity of another, where it moves with ease, because it is covered with

a smooth polished cartilage, and moistened with an unctuous humour, which smears the cartilages and prevents the bad effects of friction. What is most remarkable in this is, that these bones are so firmly set in that they do not slip out, nor separate from each other, although the feet be obliged to carry so great a burden, and the hands to lift sometimes more than one hundred pounds weight!

In the arrangement and disposition of the different parts of our body, God has provided also for our *convenience.* The volitions and determinations of the soul may be executed without obstacle or difficulty by the organs of the body. By means of the senses it is speedily informed of whatever concerns it; and the different members of the body directly obey its orders. The *eye,* which must watch over the whole body, is situated in the most elevated part: it can turn itself easily on all sides, and observe whatever passes. The *ears* are also situated in the highest place, at each side of the head; and stand open day and night to inform the soul of the least noise, and to communicate to it all the impressions of sound. As the food must pass through the mouth to the stomach, the organ of *smelling* is placed immediately above it, to watch like the eye, that nothing corrupted or improper may be received by it. As to the sense of *feeling,* it has not its residence in any particular place, but is dispersed over all parts of the body, that all may thereby distinguish pleasure from pain, and things injurious from things profitable. The *arms,* which are the servants which the soul employs to execute the greater part of its de-

sires, are placed near the breast, where the body has most strength; and without being at too great a distance from the lower parts, are situated in the most convenient manner for all sorts of work and exercise; and for the defence of the head and the other members.

Finally, the Creator, in the formation of our body, has designed also to attend to its *beauty*. This consists in the visible harmony and exact proportion of the members; and in the pleasing mixture of the colours of a fine and delicately formed skin. Thus we see that these parts of our bodies which are *double*, as the eyes, ears, arms, legs, &c. are placed one on each side at an equal height, the right exactly answering the left: whereas those which are single, as the forehead, nose, the mouth, and the chin, are placed in the middle. This proportion appears in the great as well as in the small. The length of the sole of the foot is the *sixth* part of the height of the whole body, as the length of the face is the *tenth*, and the cubit the *fourth* part. In children the head is larger than it should be, in proportion to the rest: the reason is, that the head being the principal part of the body, and the seat of the senses, it should come sooner to perfection than the other parts: and the more so as being entirely composed of bones, it could not extend so much as the fleshy members, which it must otherwise have done: for we observe, that in infancy all the members grow at once; and that they extend according to the most exact proportions in length, in breadth, and in thick-

ness; and thus are in continual harmony with the size of the whole body.

Admire, O man, the perfection and beauty of thy body, the connection and admirable harmony of all its parts. Each member is connected with others, yet they never embarrass nor impede one another in the performance of their different functions. They are situated in the most convenient places, that they may the more readily accomplish their offices, and lend each other mutual assistance. All the organs are so many springs in this admirable machine. They correspond to each other; and act in concert to fulfil the different purposes for which they were designed, Take heed not to destroy this curiously contrived machine; nor to deform it by irregularity and excess. Do not dishonour it by base and shameful passions. Act so that thy body may be always a monument of the wisdom and goodness of God. But especially take heed, that thy soul which has been degraded by sin, be re-established in its primitive beauty and holiness, by the mercy of thy Redeemer. It is by this alone that thou canst be compensated for the change thy body must undergo, when it shall return to the dust out of which it has been formed.

NOVEMBER XX.

ORDER AND REGULARITY OF NATURE.

In contemplating the world, we discover every where traces of a Supreme Intelligence, who ordained every thing, who has foreseen the effects which should result from the energy he has impressed on nature; and who has counted, weighed, and measured all, according to his own designs, with infinite and unerring wisdom.

Thus the universe once formed may alway continue, and constantly fulfil its destination, with the necessity of changing any thing in the primitive laws once established. The contrary is often the case with the works of men. The most skilfully constructed machines soon cease to answer the intended purpose: they require continual repairs, and are soon worn out and unfit for use. The *principle* of these arrangements and irregularities is found in their primitive construction: for there is no artist, how eminent soever he may be, who can foresee all the changes which his work may undergo, or be able to provide against them.

The corporeal world is also a machine, but its component parts and their uses are innumerable. It is divided into many luminous and opaque globes, which serve for habitations to an infinite multitude of living creatures of all kinds. The opaque globes revolve round the luminous ones in their prescribed orbits, and limited times: and receive from them light and heat, day and night, seasons, and different degrees of tem-

perature, nourishment, and growth, according to the nature and necessities of their different inhabitants. The position of the planets, and their mutual gravitation, are so diversified, that it seems almost impossible to determine beforehand, the times in which they will return to the point whence they departed, and begin a new their periodical course. And notwithstanding the variety of phenomena which these globes present to us, and the astonishing multiplicity of their motions, it has never happened in the course of a thousand years, that these enormous masses have ever struck against, or interrupted each other in their revolutions. All the planets perform their revolutions in the times prescribed to them. They have always preserved their order and their respective distances, and have never got nearer to the sun. Their respective forces are still exactly balanced, and stand in the same relations to each other. The fixed stars are the same to-day they were a thousand years ago. The distances projectile forces, right ascensions, declinations, parallaxes, and direction of all the heavenly bodies are still the same. The sun also is still at the same height: the days and nights, the years, and seasons are just now what they were formerly. An incontestable proof, that in the first arrangement of the heavenly bodies in the proportion, laws, and relations of their respective forces, and in the rapidity of their course, the wise Author of nature has foreseen and determined the future state of the world, and all its component parts, to the utmost duration of time.

The same may be said of our earth, which is annu-

ally subject to different revolutions and changes of temperature. For although it seems at first sight as if fine weather, cold, heat, dew, rain, snow, hail, lightning, tempests, and all sorts of winds, varied indifferently, and were dispensed by chance: that it is by mere accident that water overflows the land in any particular place, altering its surface by changing solid ground into lakes and marshes; that in other places we see continents where seas were formerly: that mountains are formed while others moulder away; and that rivers are either dried up or turned out of their former beds; nevertheless, it is certain, that each modification of our earth has its sufficient cause in the preceding modification: this, in that which preceded it, and the whole in that which was established at the creation of the world. But, nothing is better calculated to make us sensible of our ignorance of particular natural events, and their connection with the future, than that variety which we observe in the temperature of the air; a variety which has so much influence on the appearance and fertility of our globe. In vain we multiply meteorological observations; for it is impossible to deduce from them, fixed rules and consequences for the future; for we never yet have seen one year perfectly similar to another. Yet we are well convinced, that these continual variations, and that apparent confusion of elements, do not essentially change our globe, alter its figure, destroy its equilibrium, nor render it uninhabitable: but, that they are on the contrary, the true means of preserving annual order, fertility, and abundance. Since therefore every

present modification is founded on a preceding one, it is manifest, that the elements have not been formed and combined by blind chance; but that from the beginning an Eternal Wisdom has produced, combined, and measured the elements; appreciated their powers, and determined their effects till the conclusion of time.

Thus, the whole is not composed of disunited or ill-connected materials, or of parts which have neither relation to, or connexion with each other: it is a regular and perfect whole; the structure and arrangement of which, is the work of a Supreme Intelligence. If we behold in the world a multitude of beings which have the same nature and destination that we have, and are united by a multitude of relations: if we discover genera and species more numerous still of other creatures, which are also more or less mutually connected: if we allow, that by the mixture and action of elements, all these animated beings are supported, and receive all that their nature requires: if, afterwards, we carry our thoughts further, and consider the relations there are between our earth and the heavenly bodies, and constant regularity of their motions, the conformity, concord, and admirable harmony which are found among all these globes that are placed within our notice, we shall be more and more filled with astonishment at the sight of the magnificence, order, and beauty of nature; and more deeply convinced of the infinite wisdom of the Creator. But, all that we know at present, of the order and harmony of the corporeal world, is but a small ray of that eternal light which we hope for; and in the enjoyment of which

that Divine wisdom, which is now in so many respects impenetrable to us, shall be manifested to us with infinite splendor.

NOVEMBER XXI.

OF WINTER IN THE NORTHERN COUNTRIES.

THE time is now approaching, which excites the discontent of so many people. The severe season of winter appears to them, to contradict the plan of the Ruler of the universe, which in all other respects is so wise and beneficent. The rich complain that nature is become gloomy and dismal; and the poor, whose poverty and wants increase in this season, groan and murmur. Yet let those ungrateful people magnify as they please the inconveniencies and distresses of winter, they shall be obliged to acknowledge, when they compare their lot with that of other countries, how great God's goodness is toward them in this respect. For, in a great part of the northern countries, there is neither spring nor autumn; and the heat is as insufferable in summer, as the cold is in winter; the violence of the latter is such, that *spirits of wine* freezes in the thermometer. When the door of a warmed chamber is opened, the external air which enters, converts all the vapours within into snow; so that the place is filled with thick white vapours. If a person go out of the house he is almost suffocated, and the air seems to tear the lungs. All appears in a state of death, no

person daring to quit his apartments. Sometimes the cold becomes so intense, and that suddenly, that if a person cannot make a timely escape, he is in danger of losing an arm, a leg, or even life itself. The fall of the snow is still more dangerous: the wind drives it with so much violence, that a person cannot possibly find his path: the trees and bushes are covered with it, people's eyes blinded, and at every step, the traveller is in danger of falling into a new precipice. In summer, the day lasts for three months; and during the same space, a perpetual night reigns in winter.

What would they say, who complain of the cold in our climates, were they obliged to live in the countries above described? It is plain, that we do not know our own advantages, or a very little reflection would suffice to shew us how contented we should be with our lot. However gloomy or severe our winter days may be, they are quite supportable by people in general; and if there be some who cannot bear them, it is chiefly owing to their effeminacy and self-indulgence.

But why has the Creator appointed so many thousands of people to dwell in regions where nature fills them with terror for a great part of the year? Why has he not made these people as comfortable as we are? Foolish questions! We are mistaken, if we suppose that the inhabitants of the North Pole are unhappy, through the length and severity of their winter. Though poor, yet being exempt through their simplicity from all desires, not easy to be satisfied, these people live contented among the icy rocks by which they are encompassed, without knowing the blessings

which the inhabitants of southern climes consider as an essential part of their felicity. If the barrenness of their soil prevent their fields from bringing forth such a variety of fruits, plants, &c. as ours produce, the sea is so much the more bountiful in its gifts to them. Their mode of life inures them to cold, and enables them to defy the tempests: and, as to particular resources, without which they could not support the rigour of the climate, nature provides them in abundance. Their deserts are stocked with wild beasts, the fur of which protects them against the cold. Their reindeer supplies them with food, drink, garments, beds, and tents: this supplies most of their wants; and the animal that thus provides for them is supported with very little expence. When the sun does not rise with them, and they are surrounded with darkness, nature herself lights a torch for them, and the *Aurora Borealis* illuminates their nights. Possibly these people consider their own country as the most extensive and happiest in the world, and pity our lot as much as we commiserate theirs.

Thus each climate has its advantages and inconveniencies, which are generally so well balanced, that it is difficult to say upon the whole, which deserves the preference. Considered in this point of view, there is no country on the earth, whether the sun dart his rays on it in a perpendicular or oblique direction, or whether covered with eternal snow or otherwise, that can be said to enjoy more advantages than any other. In one place the conveniencies of life are more numerous; in another, that *variety* of blessings is absolutely want-

ing; but those who have not this variety are subject to fewer temptations, carking cares, or bitter remorse: in a word, they are ignorant of a multitude of obstacles to happiness, and this doubtless compensates for the want of a number of pleasures. We know with certainty, that Providence has dealt out to each country what was necessary for the support and comfort of its inhabitants. Every thing is adapted to the nature of the climate, and God provides, by the wisest means, for the wants of his creatures.

NOVEMBER XXII.

TRANSFORMATIONS IN NATURE.

The transformations which take place in nature, are numerous; or rather, every thing is metamorphosed in the natural world. The form of objects varies continually; certain bodies pass successively through the animal, vegetable, and mineral kingdom: and there are some compound substances which gradually become minerals, plants, insects, reptiles, fish, birds, beasts, and men. Millions of bodies are annually turned into dust. Where are the flowers which, during the spring and summer, adorned our fields, gardens, and meadows? One species appears, withers, and gives place to another. The flowers of March, and the modest violet, after having announced the approaching spring, have disappeared, that we might have room to admire the tulip and the rose. In their places

others spring up, till all the flowers have fulfilled their design. It is exactly the same with respect to men. One generation comes, and another goes. Thousands of human bodies return annually to that dust from which they were taken: but, from the redissolved bodies, new and more beautiful ones are formed. The salts and oils of which they were composed, dissolve in the earth: the more subtile parts are elevated in the atmosphere by the heat of the sun; are there mingled with other matters, and, being variously dispersed by the winds, fall down in dew and rain, sometimes on one place, and sometimes on another: as to the more gross parts, they unite with the earth. The grass which is nourished by this, grows into long spires: thus, the flesh of man becomes grass, and feeds the flocks, whose wholesome milk and flesh are afterwards converted into our own substance.

These continual transformations which take place in nature, are a sufficient proof, that the Creator has determined, that nothing shall be lost, and that nothing is useless. The dust on flowers, which is employed in the fecundation of plants, is but a very small portion of what each flower contains: but, what appears superfluous, is not lost; the wisdom of God has formed the bees, who make use of it for their honey. The earth gives us daily new gifts: and it would be finally exhausted, if what it gives, were not by some means rendered back again. All organized bodies become decomposed, and are at last converted into earth. During this dissolution, the volatile parts are raised into the atmosphere and dispersed every where. Thus the

remains of animals are scattered through the air, as well as through the earth and water: and perhaps the parts which rise into the atmosphere are by far the least numerous. All those particles, dispersed hither and thither, speedily reunite in new organic bodies, which, in their turn, shall undergo the same transmutations. And this circulation, these continual metamorphoses, which began when the world was created, shall terminate only when it is destroyed.

But the most remarkable transformation, or at least that in which we are most interested, is what concerns ourselves. We know that our bodies have not been originally, and will not hereafter be composed of the same number of particles as at present. The body which we had in our mother's womb was extremely little: it was larger when we came into the world: and since that time, it has increased to fifteen or twenty times that size: consequently blood, flesh, and other foreign substances, drawn from the animal and vegetable kingdoms, which did not belong to our bodies, have been since assimilated to them, and became a part of themselves. The need we have of daily food proves, that there is a continual waste of the particles of which our bodies are composed, and that this waste must be repaired by aliments. Many particles evaporate imperceptibly: for it appears, by very correct experiments made by an eminent physician on himself, that of *eight* pounds of food which are necessary for the support of a healthy man, only one *fiftieth* part is converted into his substance, and all the rest is disposed of by perspiration, and other excretions

From this it may be inferred, that in *ten* years, few of the particles of which we are now composed, will remain. And finally, when our bodies shall have gone through several changes, they shall be transformed into dust, till, at the day of the resurrection, they undergo that blessed and last revolution, which shall place them in an unalterable and eternal state.

How should we rejoice at this future state, where we shall be free from all the changes which we experience here below! Let us look with serenity on the daily rovolutions to which all earthly things are subject, and which are necessary in the present state. By acting thus, we shall draw nearer to perfection. May we not rejoice, in hope of this grand revolution! When the earth shall have undergone its last and great change, may we be introduced into the new heavens and the new earth, where even the shadow of change shall never exist!

NOVEMBER XXIII.

THE GREATNESS OF GOD DISCERNIBLE IN LITTLE THINGS.

He who delights to contemplate the works of God, will not only discover his hand in those immense globes which compose the system of the universe, but also in the little worlds of insects, plants, and metals. He will search for, and adore the wisdom of God as well in the spider's web, as in that power of gravita-

tion which attracts the earth towards the sun. These researches are at present the easier, as microscopes have discovered to us new scenes and new worlds, in which we behold, in miniature, whatever may excite our admiration. They who have not the opportunity of using these machines, will read at least with pleasure, the following remarks on microscopic objects.

Let us, in the first place, observe the inanimate world. Behold those mosses and little plants, which God has produced in such great abundance. Of what extremely small particles and fine threads are these plants composed! What a variety in their forms and shapes! Who can enumerate all their *genera*, and all their *species?* Think on the innumerable multitude of small particles of which every body is composed, and which may be detached from it. If a hexagon of an inch square, contain a hundred millions of visible parts, who can calculate all the particles which compose a mountain! If millions of globules of water may be suspended from the point of a needle, how many must there be in a spring, in a well, in a river, in the sea! If from a lighted candle there issue in a *second*, more particles of light than there are grains of sand on the whole earth, how many igneous particles must there issue from a large fire in an hour! If one grain of sand contain more than a thousand millions of particles of air, how many must there be in the human body! If men can divide one grain of copper into millions of parts, without arriving at the first elements of matter; if odoriferous bodies can exhale a sufficiency of odorous particles, so as to be perceived at a great distance,

without any sensible diminution of weight in those bodies, it would require an eternity for the human mind to calculate the number of these particles!

If we pass next to the animal kingdom, the scene will be infinitely extended. In summer the air swarms with living creatures. Each drop of water is a little world full of inhabitants. Every leaf is a colony of insects: and every grain of sand is the habitation of a multitude of animated beings. Every plant, seed, and flower, nourishes millions of creatures. Every person has seen those innumerable swarms of flies, gnats, and other insects which gather together in a small space: what prodigious hosts must there be of them that live, sport, and multiply their kind over the face of the whole earth, and in the immense extent of the atmosphere! How many millions of still smaller insects and worms are there which crawl on the earth, or in the entrails of animals, the number of which is only known to God! With what splendor does the power of God manifest itself to the mind, when we reflect on the multitude of parts of which these creatures are composed, of whose very existence most men are ignorant. Were we not convinced of it by daily experience, could we imagine there were animals a million of times less than a grain of sand, with organs of nutrition, motion, generation, &c.? There are shell-fish so small, that even viewed through the microscope, they appear scarcely so large as a grain of barley; and yet they are real animals, with durable dwelling-places, the foldings and recesses of which form so many different apartments! How exceedingly small is a *mite!* Ne-

vertheless, this almost imperceptible point seen through a microscope, is a hairy animal, perfect in all its members, of a regular figure, full of life and sensibility, and provided with every necessary organ. Although this animal is scarcely visible to us, yet it has a multitude of still smaller parts: and what is yet more admirable is, that the glasses which shew us so many faults and imperfections in the most finished works of men, can discern nothing but irregularity and perfection in these microscopic objects. How inconceivably fine and slender are the threads of a spider! It has been calculated, that it would take 36,000 of them to make the thickness of a thread of common sewing silk! Each of the six papillæ, from which the spider draws that glutinous liquor of which it forms its web, is composed of a thousand insensible pores, which give passage to so many threads; so that however fine the spider's thread may appear, it is composed of 6000 smaller ones!

You are struck with astonishment.—But suppose we had microscopes which would magnify some thousands of times more than those glasses do, through which a mite appears no larger than a grain of barley, what wonders should we then see! And even then, should we reach the limits of the creation in these inconceivably small productions? Certainly not: and it would be presumption and extravagance to believe it, Each creature has a kind of infinity; and the more we contemplate the works of God, the more the wonders of his power shall be multiplied in our sight.

Our imagination is confounded in the two extremes

of nature, the *great* and the *small:* and we know not whether we should admire the Divine power more in those enormous masses, those immense globes which roll above our heads, or in those microscopic animals which are invisible to the naked eyes. Should not the contemplation of the works of God be our most pleasing occupation? The trouble of study would be amply compensated by the pure and innocent pleasures which it would afford. It would, at least, awaken in us an ardent desire to arrive in those blessed regions where we should require neither microscopes nor telescopes to enable us to discover the wondrous works of God. There, all his works shall be so unveiled to our eyes, that we shall be able to distinguish the destination, structure, and relations of each object. There, immortal songs of praise shall resound to the honour of the Creator of the universe. There, all distinction of great and small shall be entirely done away, for every thing shall appear great in our sight, and fill our souls with admiration and joy!

NOVEMBER XXIV.

GRADUAL INCREASE OF THE COLD.

We daily perceive that the cold gradually increases. In the last month we lost part of the warmth of autumn: but the cold was then very moderate; for the earth was still in a measure warmed by the rays of the sun. The present month is still colder, and the shorter

the days grow, the more the earth loses its warmth; and the cold consequently increases. We cannot doubt this: daily experience proves it. But do we sufficiently consider the wisdom and goodness of the Creator, which are manifest in this arrangement? It certainly requires but a small degree of attention, to discover this wisdom and goodness in the insensible progress of the cold.

In the first place, this gradual increase is indispensably necessary, to prevent a derangement in, if not a total destruction of our bodies. If the cold which we feel in the winter months were to come suddenly in the beginning of autumn, we should be instantly benumbed, and this change would speedily become mortal. How readily do we catch cold in the cool summer evenings? And how would it be, were we to pass suddenly from the burning heats of summer to the freezing cold of winter? With how much goodness has the Creator provided for our health and life, in granting us such a temperature in the months which immediately follow the summer, as sufficiently prepares our bodies to endure the increase of the cold without injury?

What would become of the animals whose delicate constitution could not endure the cold, if the winter came on suddenly, and without being previously announced? Two-thirds of fowls and insects would perish irrecoverably in a single night; and their eggs and young with them. But as the cold augments by degrees, they have time to make the necessary preparations for their preservation. The autumnal months, which separate the summer from the winter, warn

them to leave their present dwellings to go into warmer climates, or seek places where they may quietly and securely rest during the severe season.

It would not be less fatal to our fields and gardens, were the earth to be suddenly deprived of the heat of summer: all the plants, and particularly the exotics, would instantly perish; and the spring could produce no flowers, and the summer no fruits.

It is therefore just, that in this arrangement we should acknowledge and adore the wisdom and goodness of God. Let us not consider it as a matter of little importance that the heat diminishes insensibly, and the cold gradually increases, from the end of summer to the beginning of winter. These insensible revolutions were necessary, that we, and millions of other creatures might be able to subsist; and that the earth might be able to bring forth fruit. If the presumptuous man, who so often dares to find fault with the laws of nature, could displace one single wheel in the great machine, he would soon find, to his cost, that instead of mending he had marred the whole. Let us understand, that nothing is suddenly produced; and that no change takes place till it is sufficiently matured. All natural events succeed each other gradually, all proceed in the most regular order, and happen precisely at the specified time. ORDER is the great law, which God follows in the government of the world; and hence it is, that all his works are beautiful, regular, and perfect.

Let it be our constant occupation to study the beauty and perfection of God's works, and we shall

acknowledge the traces of the divine wisdom and goodness in every season of the year. Then all those foolish complaints shall cease, by which we have so often insulted our Creator; we shall find order, wisdom, and goodness even in those things, where we thought we could discover nothing but disorder and imperfection; and we shall exclaim at last, with the deepest conviction—All the ways of the Lord are goodness and truth; his conduct towards us is mercy and kindness; but this is evident only to those who love his covenant, and keep his precepts.

NOVEMBER XXV.

REFLECTIONS ON SNOW.

DURING winter, the dullest season of the year, the earth is often covered with snow. Every person sees it fall, but few take the trouble to examine its nature, or inquire into its use.

This is the general lot of those objects which we have commonly before our eyes, and from which we derive various advantages. Often, the things which deserve our attention most, are those which we generally neglect. Let us be wiser in future; and begin by reflecting a few moments on *snow*.

It is formed of very light vapours, which being congealed in the atmosphere, fall down afterwards in flakes of different dimensions. In our climates these flakes are often very large; but we are assured, that in

Lapland the snow is very small, and resembles fine dry dust. This is doubtless occasioned by the great cold of that country. It is observed, that among us the flakes are large in proportion to the degree of cold; and that they become very small when it freezes intensely. The little flakes generally resemble hexagonal stars; but some have *eight* angles, others *ten*, and some are altogether irregular. The best way of examining them is to receive them on white paper: but hitherto little has been said satisfactory on the cause of these different forms. The *whiteness* of this meteor may be easily accounted for. Snow is extremely thin and light; consequently it has a great multitude of pores which are filled with air: it is besides composed of parts more or less, close and compact: such a substance does not permit the rays of the sun to pass through, nor does it absorb them; on the contrary, it reflects them with considerable force, and this is what makes it to appear white to us.

Snow as it falls is twenty-four times lighter than water. This is proved by melting twenty-four measures of snow, for they produce but one of water. For snow is not frozen water, but only frozen vapour. Snow evaporates considerably; and the greatest cold does not impede this evaporation. It has been doubted whether it snows at sea; but those who have performed voyages in the winter on the northern seas, have assured us that they have there met with much snow. It is well known, that the tops of high mountains are generally covered with snow: if a part of it melts, it is speedily replaced by new flakes. As the air

is much warmer on the plains, than it is on the mountain-tops, it may rain on the former, while it snows heavily on the latter.

Snow has a variety of uses. As the cold of winter is more injurious to the vegetable kingdom than it is to the animal, plants must perish, were they not protected by some covering. God has so ordered it, that the rain which in the summer fell to cool and nourish the plants, should fall in winter under the form of soft wool: which covers the vegetables, and protects them from the rigours of the frost, and the chilling blasts of wind. Snow has a certain degree of warmth; but so temperate as not to stifle the grain. And, as it contains, like all other vapours, different salts, which it drops when thawed, it contributes much to the fertilization of the earth. When, therefore, the snow melts, it becomes a fruitful moisture to the earth; and at the same time, washes away from winter seeds and plants whatever might prevent, or injure their growth. What remains of this snow-water, helps to supply springs and rivers, which were diminished during the winter.

These reflections may be sufficient to convince us of the goodness of God, which is manifest in the meteor of which we have spoken. We see plainly that winter has its advantages, and that it is not such a gloomy season as many imagine. Let us raise our hearts in gratitude and joy to that beneficent God, who even from snow and clouds, pours down blessings and abundance upon the earth. Our complaints and murmurs are insulting to the Divine Government; and

they are the more criminal, because we may in every occurrence behold the footsteps of the wisdom and goodness of God.

NOVEMBER XXVI.

SLEEP OF ANIMALS DURING WINTER.

NATURE seems dead at present, because it is deprived of so many creatures, which in summer rendered it so beautiful and lively. Most of the animals which have disappeared, are buried during the winter in a profound sleep. This happens not only to Caterpillars, but also to May-bugs, Ants, Flies, Spiders, Snails, Frogs, Lizards, and Serpents. It is an error to suppose that the ants lay up provisions for winter: the least cold benumbs them, and they continue in this state till spring. Of what use then would magazines of provision be, seeing nature has prevented their need of food in winter? Nor does it appear, that they collect stores for other animals. What they collect during the summer with so much care, serves not for their subsistence; they employ it only as materials for building their habitations.

There are also several birds, which when food begins to fail, hide themselves in the earth, or in caves, to sleep out the winter. We are assured, at least, that before winter sets in, the *Strand-swallows* hide themselves in the earth; the *Wall-swallows* hide themselves in holes of trees and old buildings; and the

House, or *Common Swallows* seek for ponds, where they fasten themselves in pairs, and cling to roots or reeds, and continue without motion, and apparently without life, till the return of spring re-animates them.

There are some beasts also, which bury themselves in the earth towards the end of summer. The most remarkable of these is the *Mountain Rat*, which generally lives on the Alps. Though it delights in the highest mountains, in the regions of frost and snow, it is, nevertheless, more subject than any other animal to be benumbed with the cold. Hence it is, that these animals hide themselves about the end of September, or beginning of October, in subterraneous dwellings; in which they remain till April. There is much art and precaution in their winter residence. It is a sort of gallery, the two wings of which have a particular opening; and both terminate in a place where there is no other opening; and this is their habitation. One of these two branches goes sloping down from the place where they lodge; here they deposit their excrements, the moisture of which readily runs off. The other branch is more lofty, and serves them to go in and come out by. The place where they dwell, is lined with hay and moss. This animal lays up no provision for winter, as it would be useless. Before they enter into their winter quarters, each prepares a bed of moss and hay with great care; and when they have formed the two openings of their dwelling, they compose themselves to sleep. As long as their torpid state endures, they taste nothing. At the commencement

of winter they are so very fat, that some of them weigh not less than twenty pounds; but they fall away by degrees, and are very lean in the spring.

As they eat nothing during the winter, they have no evacuations, their *Cæcum*, or first great gut, is furnished with annular valves, which retain the excrement till the time of their waking. We are informed, that as soon as these animals feel the first approach of the cold, they go to some spring, where they drink so long and so plentifully, till the water which they make comes from them as pure and clear as it was when they swallowed it. A natural instinct leads them to this, to prevent the corruption which matters accumulated in their stomach might occasion, during their long state of torpidity. When these animals are discovered in their retreats, they are found rolled up in a lump, enveloped with hay: their nose laid in their belly, that they may not perspire too much of their moisture: their lymph wastes fast enough; and it was highly necessary to have attenuated their blood by the quantity of water which they drank. During their torpid state they may be carried away without awaking them: and they may be even killed without appearing to feel it. There is another species of rats, whose sleep is as long and profound as that of the *Mountain Rat;* and which are therefore termed the *Seven Sleepers.* *Bears* eat prodigiously at the beginning of winter: and they seem to eat, as if they intended to devour as much at once, as would be sufficient for their whole lives. As they are naturally fat, and are excessively so at the end of autumn: this abundance

of fat enables them to endure their abstinence during the winter. *Badgers* prepare themselves in the same manner for their winter's repose.

The instinct of these, and other animals, teaches them how to preserve themselves without nourishment, during so long a time. From their first winter, even before they could have learnt any thing by experience, they foresee their long sleep; and provide against it. In their peaceable retreat, they neither feel want, hunger, nor cold. They know no other season than that of summer; and what is still more remarkable is, that all animals do not sleep thus during winter: it is only those which with the severe cold, can also endure an abstinence of several months. If the winter came upon them unawares, so that though enfeebled with hunger, and benumbed with cold, they still continued to live; it might be said that there was nothing surprising in this, but the strength of their constitution. But, as they know how to prepare themselves beforehand for the time of their sleep; and as the most of them do this with much care and precaution, we are obliged to attribute the whole to an admirable instinct, with which the Creator has endued them. Yes, the wisdom and goodness of God have provided for the wants of all his creatures: and this he can do by a thousand different ways, which the human understanding cannot conceive. May we not conclude from this, that as he thus watches over all the works of his hands, he will not disdain to watch even for our preservation and comfort?

NOVEMBER XXVII.

USE OF STORMS.

PERHAPS there are several, who in this stormy season, reckon winds and tempests among the disorders, and scourges of nature. They do not consider the benefits which result from them; as without them we should be a thousand times more unhappy than we really are. Nothing can be truer than this: Tempests are the proper means of purifying the atmosphere: to be convinced of which, we have only to pay attention to the general state of the weather at this season. What thick and unwholesome mists; what rainy, gloomy, and cloudy days have we at present! Storms are chiefly designed to disperse these noxious vapours, and remove them from us: and this is doubtless a great benefit, which we derive from them. The Universe is governed by the same laws as man: who is not improperly called *a little world*. Our health consists, in a great measure, in the agitation and mixing of the various humours; which, without this, would soon grow corrupt. The case is the same with respect to the world: that the air may not become injurious, either to the earth or to animal life, it is necessary that it should be continually agitated; and this the winds effect. I do not mean by gentle light winds, but by storms and tempests, which collect vapours from different countries; and forming one mass of the whole, mix the good and bad together, and thus correct the one by the other.

Storms are also useful to the sea. Were it not

violently agitated, the stagnation, even of salt water, would produce a degree of putrefaction, which would not only become mortal to the innumerable shoals of fish which live in it, but would also be very injurious to those who sail on it. *Motion* is the soul of universal nature; it preserves every thing in order, and prevents destruction. Were the sea itself excepted from the general rule, as it is the common receptacle for all the dregs of the earth; where so many millions of animal and vegetable substances putrefy; were it not continually agitated, its waters would putrefy, and infect every thing with their insupportable stench. Motion is as necessary to the sea, as the circulation is to the blood of animals: and the other causes, which give it a gentle, uniform, and almost insensible motion, are not sufficient to purify the whole mass. Nothing but *storms* can produce this effect; and we see what great advantages result from this, not only to men but also to many millions of other animals.

These are some of the uses of storms; and the reasons which ought to prevent us from considering them as destructive scourges and instruments of the Divine vengeance. It is true, that storms have often destroyed vessels richly laden, destroyed the hopes of the husbandman and the gardener, laid whole provinces waste, and spread terror, desolation, and horror every where. But, what is there in nature, which has not its inconveniencies; and which may not become in certain respects noxious? Shall we reckon the sun in the list of the scourges of our globe, because, from his situation, the earth is for some months bar-

ren, and at other times his heat scorches and dries up our fields? Those phenomena of nature should only appear formidable to us, where the advantages are little or nothing in comparison of their attendant evils. But, can this be said of storms, if we consider the benefits which result from them to the earth, to men, and to beasts? Let us, therefore acknowledge, that God has planned all in wisdom; and that we should be satisfied with the present constitution of things. Happy they, who are convinced that every thing in the universe tends to the general good of the creatures; that the evil which may be found in the world, is compensated by numerous advantages; and that the means even which Providence makes use of to prove and chasten us, are, in themselves, indispensable benefits; the general effects of which, abundantly compensate for the partial evil, which in some particular cases may result from them.

NOVEMBER XXVIII.

FORTUITOUS EVENTS.

PROPERLY speaking, *chance* can produce nothing: for nothing can happen, but what has its real and determinate cause. What we call chance then, is no more than the unexpected concurrence of several causes, which produce an unforeseen effect. Experience teaches us, that these kinds of causes are frequent in human life; unforeseen accidents may entirely

change the fortune of men, and blast all their designs. Naturally speaking, it seems as if the race should be to the swift, the battle to the strong, and success to the most wise and prudent: but, this is not always the case; and often an unexpected accident, a favourable circumstance, and an event which it was impossible to foresee, are more effectual than all that human power, wisdom, and prudence can perform. How many would be to be pitied, if a wise and beneficent hand did not regulate every event? And how could God govern men, if what is called chance were not obedient to his voice? The lot of individuals, of families, even of whole kingdoms, depends often on circumstances, which may appear to us little and despicable. Were we to deny that Providence governs these small events, we must at the same time deny that it has any influence in the greatest revolutions which happen in the world.

We see that accidents daily take place on which our temporal happiness or misery, in a great measure depends. It is evident, that we cannot guard against this sort of accidents; because we cannot foresee them. But it follows thence, that these unexpected events, which are above our understanding, are nevertheless subject to the empire of Providence. The wisdom and goodness of God leave us, more or less, to ourselves; according to the degrees of strength and understanding we have to conduct ourselves rationally. But, in those circumstances, where our strength and prudence can perform nothing, we may rest assured, that God will more particularly watch over us for good. In all other

cases, human labour and industry must concur with the aid and protection of heaven: for, it is only in those unforeseen accidents, that Providence acts *alone*. And as, in all that is termed *chance*, we see evident footsteps of the wisdom, goodness, and justice of God, it is manifest that chance itself is subject to the Divine Government: and it is then that the Empire of Providence appears with most splendor. When the beauty, order, and arrangement of the world fill us with admiration, we conclude, without hesitation, that an infinitely wise Being must preside over it. With how much greater reason should we draw the same conclusion, when we reflect on those great events, produced by accidents, which the human mind could not foresee? Have we not a thousand examples, that the happiness, and even the life of men, the fate of nations, the issue of a war, the revolutions of empires; and other similar affairs, depend on accidents, absolutely unforeseen? An unexpected event, may confound projects, concerted with the utmost secrecy and address; and annihilate the most formidable power. It is on the well-grounded belief of a Providence, that our faith, tranquillity, and hope must rest. Whatever the evils may be, which surround us; however great the dangers, by which we are threatened, God can deliver us by a thousand means, entirely unknown to ourselves. The lively persuasion of this consolatory truth, ought, on the one hand, to fill us with profound respect for the Governor of the world; and on the other, engage us to seek God in all things; to raise our hearts always to him, and to put our whole trust

and confidence in him. This truth ought likewise to curb our pride; and inspire, particularly, the great men of the earth, with that religious fear which they should have for the Supreme Being, who holds in his hands a thousand means unknown to us; by which he can overturn the fabric of happiness, which we have so arrogantly erected. Lastly, this same truth is better calculated than any thing else, to banish from our souls all distrust, anxiety, and discouragement; and to fill us with holy joy. "The infinitely wise Being has a thousand ways unknown to us; but they are ways of mercy and love; and all his dispensations are regulated by wisdom and justice. He wills the happiness of his creatures; and nothing can oppose his will. He commands, and universal nature is obedient to his voice."

NOVEMBER XXIX.

THE MAJESTY OF GOD.

NOTHING is more difficult, than to endeavour to form such ideas of God, as are in any degree worthy of his greatness and Majesty. It is as impossible for us to comprehend him perfectly, as it would be to hold the sea in the hollow of our hand; and compass the heavens with a span. Of God it may be justly said, HE is both well known to, and concealed from us. He is very nigh, and yet infinitely beyond us. Well known and very nigh in respect to his being; and infinitely

distant and hidden in respect to his nature, perfections, and purposes. But on this very account, it is our duty to endeavour to know his greatness; as it is necessary that we should form those sentiments of veneration for him which are his due. To assist our weakness in this respect, let us compare him with what men esteem and admire most, and we shall see that God is infinitely above all.

We admire the power of kings; and we are filled with astonishment when we find they have conquered vast empires, taken cities and fortresses, erected superb buildings, and have been the means of the happiness or misery of whole nations. But if we are struck with the power of a man, who is but dust and ashes, the greater part of whose exploits is due to other agents, how should we admire the power of God, who has founded the earth and formed the heavens; who holds the sun in his hand, and upholds the immense fabric of the universe by the word of his power! We are, with reason, astonished at the heat of the sun, the impetuosity of the winds, the roaring of the sea, the peals of thunder, and the inconceivable rapidity of the lightning: but it is God who lights up the solar fire, who thunders in the clouds, makes the winds his messengers, the flames of fire his ministers, and who raises and calms the waves of the sea.

We justly respect those who have distinguished themselves by the extent of their genius and their knowledge; but what is knowledge, what the whole human understanding in comparison of the wisdom of that august Being, before whom all is uncovered and

all known: who counts the stars of heaven, numbers the sands of the sea; knows the path of every drop that falls from the atmosphere; and who, with one look, beholds the past, the present, and the future in the same moment! How much wisdom shines in the construction of the universe; in the revolutions of the planets; in the arrangement of our globe; in the meanest worm; and in the smallest flower! They are so many masterpieces, which infinitely surpass the most magnificent and most perfect work of man.

We are dazzled with the splendor of riches; we admire the palaces of kings; the magnificence of their furniture; the pomp of their clothing; the beauty of their apartments; and the abundance of gold, silver, and precious stones, which shine on every side: but how little is all this, compared with the riches of the Lord our God, whose throne is the heavens; and whose footstool is the earth! The heavens are his, and the earth also; the habitable world, and all that dwell therein. He has fitted up dwellings for all creatures; he has established stores for all men and all animals: he causes grass to grow for cattle; and corn for the service of man. All that is useful and excellent in the world, is drawn from his treasures. Life, health, riches, glory, happiness, every thing that can constitute the good of his creatures; all are in his hand, and he distributes them according to his good pleasure.

We respect the great men of the earth, when they command a multitude of subjects, and reign over many countries: but what is that spot which is subject to

them, in comparison of the empire of the universe: of which our globe is but a small province; which extends over all the heavenly bodies and their inhabitants! How great must that Master be who has all the monarchs of the universe for his servants; and who beholds around his throne the cherubim and seraphim ever ready to fly to execute his orders!

We judge of the greatness of men by their actions: we celebrate kings who have built cities and palaces; who have governed their estates well, and who have successfully accomplished great designs. But how astonishing are the works of the Most High! How wonderful the creation of this immense universe; the preservation of so many creatures, the wise and equitable government of innumerable worlds; the redemption of the human race; the punishment of the wicked; and the recompence of the good!

Who is like unto thee O Lord! Thou art great, thy name is great, and thy works proclaim thy grandeur! Nothing can be imagined equal to the greatness of our God. Should not a religious reverence ever possess our souls at the thought of the presence of the Ruler of the world, the Lord, who encompasses all our paths! The brightness of the stars is absorbed by the presence of the sun: thus all the glory, all the knowledge, all the power, and all the riches of the world vanish, when compared with the glory and majesty of God. The soul exults, and is ennobled in meditating on the greatness of the Most High. Such sublime meditations delightfully exercise all our spiritual faculties: we are filled with reverence, admiration, and joy;

when, in a holy transport, we represent to our minds, the Being of beings, the Eternal, the Almighty, the Infinite! Can we help exclaiming with ecstacy, The Lord, HE is God! The Lord, He is God! Give glory to Him for ever and ever!

NOVEMBER XXX.

MOTIVES FOR CONTENTMENT.

LET sweet contentment take possession of our souls. God is good: mercy and love shine through all his works. Let us contemplate his mighty deeds: the world and all it contains proclaim him: all that he has formed is worthy of him alone.

The heavens and the earth are proofs of his power: the sun who rules the day; and the moon who rules the night; all that is endued with motion and life, exalt the mighty God.

Consider the works of his hands: men and brute shew that his power is infinite: even the smallest objects, the spire of grass, and the grain of dust, teach the knowledge of the Lord.

Ask the mountains, and the vallies; the heights of heaven, and the depths of the ocean; the winds, and the tempests; the despicable worm that crawls in the dust, and they will all proclaim his wisdom infinite, and his power unbounded!

How shall we exalt him! With what songs of praise shall we celebrate that God, who has given us life and

being! Our bodies, and the souls which animate them, are presents from his hand: may we magnify him as long as we have a being!

Objects of his faithful care, throughout the day, each morning witnesses that he has watched over us during the darkness of the night. No moment passes without furnishing us with motives to bless him, who is the light and strength of our life.

If we be a prey to adversity, and oppressed by sufferings; scarcely do we feel the weight of them, till the Divine power comes in to enable us to support them. His victorious strength comes to our succour; and our difficulties are surmounted.

O my soul, thou hast long experienced this; let it never be forgotten: never give way to the fear that thou shalt be abandoned by that God, who cannot hate any thing he has made.

Let us submit to his holy will; and bless him for all his dispensations; persuaded that he will accomplish his merciful designs; for he is great in counsel, and abundant in means.

NOVEMBER XXX.*

GRATITUDE AT THE REMEMBRANCE OF PAST MERCIES.

ALMIGHTY God; thou art the common Father of all the generations which dwell on the earth: thou art *my* Father also. May I feel myself absolutely de-

pendent on thee, not only in respect to my existence, but also for every thing I possess! I bless thee, I give thee thanks for the life which thou hast granted me; and for all the mercies which thou hast heaped upon me from the beginning until now.

I bless thy kind providence for my tender family relations, and for all the comforts and benefits which I have enjoyed in domestic life.

I bless thee for the life and health I enjoy; and for the abundant means which thou hast provided to feed, clothe, and furnish me with a convenient habitation: thou, Lord, hast provided for all my necessities.

I give thee thanks for the success, with which my just enterprizes, and the labours of my calling have been crowned: for all the blessings, which thy liberal hand has daily conferred on me; and for every thing which has in any way or measure contributed to my preservation and temporal happiness.

I should also bless thee, that when thou didst permit adversity and affliction to approach my dwelling, thou didst not then leave me without comfort and support. In the midst of my trials, and the just chastisements, which thou hast sometimes inflicted on me, thou has not abandoned me. Thou hast softened and moderated the corrections which I deserved; and thou hast condescended again to restore me to thy favour. Thy fatherly hand has guided me; and thou hast rejoiced over me to do me good

Should not the constant experience which I have had of thy goodness, fill me with perfect confidence; and encourage me to trust my soul, body, and inter-

ests in thy hands? May I not hope that thou wilt continue to watch over me; and that as far as thou judgest it consistent with my real happiness, thou wilt preserve me from those ills and distressing accidents, which might disturb my repose? May I enjoy, with a wise and grateful heart, the mercies thou grantest me; that in prosperity I may ever aspire after thee, who art the Author of all good! But, if thou hast determined, in the impenetrable councils of thy wisdom, that I should pass through various ills, afflictions, and disappointments, may I submit with perfect resignation to the wise dispensations of thy Providence, and glorify thee to the utmost of my power in adversity, as well as in prosperity!

To thee, O Lord our God, to thee, who art the Father of all thy intelligent creatures in heaven and in earth, to thee be honour and glory, now and for ever!

DECEMBER I.

A HYMN OF PRAISE.

WELL may our souls be astonished, and filled with admiration, when we reflect on the unmerited mercies which we have received from the hands of the Lord our God! Laden with his mercies, filled with

transport, how can we sufficiently express our gratitude and joy!

While we were yet asleep, concealed in our mother's womb, thou didst then fix our lot: thou hast regulated the condition of mortals, before their eyes saw the light of the day: and mine was (O blessed lot!) to be born in a Christian land.

Full of compassion for our weakness, thou didst incline thine ear to our infant cries: our lips stammered thy praises; and thou didst condescend to hear what could not as yet be termed *prayer*.

When in the giddiness of youth, we wandered far from the paths of virtue; thy merciful goodness condescended to recal us to a sense of our duty.

Thou hast been our shield and fortress in danger and distress; and thou hast often preserved us from the snares of vice; more to be dreaded than the worst temporal calamities.

When threatened with death, a mortal paleness was diffused over our face; thou didst rekindle the almost extinguished lamp of life: and when the remembrance of our transgressions tormented our souls, thy grace afforded us comfort.

Blessed art thou, who hast loved us so well: who hast given us the sweet consolations of friendship. But, what is that greatest of all benefits which the heart can conceive: for which this heart, entirely consecrated to thee, desires to exalt thee, the greatest good which can be possibly enjoyed on earth?—Is it not, my God, to be permitted to approach *thee*, to

celebrate thy mercy, and to glorify the name of the Almighty?

In my fears, in my distresses, in dangers and wretchedness, I will confide in thy mercy alone. When my soul is strengthened by thee, even death itself shall lose its terrors.

When the heavens shall pass away with a mighty noise; when the fabric of the universe shall be dissolved, I shall triumph above its ruins, and bless the powerful hand that has raised me above the wreck of a crushed world. O thou Most High; eternity is too short to utter all thy praise!*

DECEMBER II.

THE ERA OF THE CREATION OF THE WORLD, AND THE FORMATION OF MAN.

If we fix the epoch of the creation of the world, according to the testimony of the sacred writings, it can scarcely have subsisted 6000 years. Those who suppose it much older, are contradicted, both by reason, and the historic monuments, which have been handed down to us. The history of the human race, does not go further back than that which *Moses* has

* There is a great similarity between the above hymn, (which makes fourteen verses in the German) and the celebrated hymn of Mr. Addison, which begins with, "When all thy mercies, O my God, &c." Has not the *German* borrowed from the *English* poet?

written; for all that has been said concerning the origin of ancient nations, is advanced without proof; nor does their history extend beyond the general deluge. As to the chronological books of the *Chinese*, they are evidently full of falsities. The *Phœnecians* have no historian more ancient than *Sanchoniatho*, who lived after *Moses*. The *Egyptian* history does not extend beyond *Ham*, the son of *Noah;* and the books of the *Jewish lawgiver*, are not only the most ancient, but also the most authentic of all the monuments of antiquity. If the world were some thousands of years older, it must be much better peopled, than it is at present. Population has always increased since the deluge, and yet there might be three times as many more inhabitants on the earth, than it at present contains. It has been computed, that at least 5000 millions of men, might live at once on our globe: and yet it does not appear, that there are really more than 1080 millions. In *Asia*, are reckoned 650 millions: in *Africa* and *America*, 300 millions: and in *Europe*, 130 millions.

If we consider the arts invented by men, we shall find that few, or none of them have been discovered more than two or three thousand years. Man owes not only to his nature and reason, the aptitude he has for acquiring arts and sciences, but he is also led to this by necessity; by the desire he has to procure himself conveniencies and pleasures; by vanity and ambition; and by luxury, the child of abundance, which creates new wants. This propensity is evident among all men, in all ages. History carries us back to the

time, when men had scarcely invented the most necessary arts; when those arts which were known, were but very imperfectly understood; and in which they scarcely knew any thing of the first principles of the sciences.

About four thousand years ago, men were still in a state of great ignorance, concerning most subjects: and if we calculate according to the progress which they made since that time, and afterwards go back to the remotest periods, we may with tolerable exactness fix the era, when men knew nothing: which is in other words, that of the infancy of the human race. Were their existence to be carried higher, it is utterly improbable, that the most useful and necessary arts should have continued unknown to them, through such a long series of ages. On the contrary, all that can be discovered by the human mind, must have been known a long time ago. From this circumstance therefore, we must conclude, that the origin of the human race, can have no other era, than that which *Moses* has assigned it in his history of the creation. Would it not be absurd to suppose, that men during the course of so many thousand years could have remained enveloped with the thickest darkness, and plunged in a sort of lethargy, from which they suddenly awoke, and began to invent arts to procure themselves the pleasures and conveniencies of life?

Another circumstance should be remarked here: almost all Europe, was formerly covered with immense forests: very few cities, towns, or villages being found in it. It is manifest that it must be better

peopled now, than it was at that time. Germany for instance, was then but one great forest: judge therefore, what a desert it must have been! At first, men could only sow vacant places which were found here and there in the forests; they had no separate property, and changed their place of residence every year. In all Germany, there was not a single fruit-tree. Acorns alone prevailed. If we wish to draw a parallel between ancient and modern Germany, we must first put aside the inhabitants of cities, and towns; pay attention to the numerous colonies which Germany has sent to other countries; observe, that most of the forests, being now cut down, and converted into arable ground, ancient Germany could scarcely have had one tenth part of the cultivated ground which it at present contains: and, consequently, could have had but one tenth part of its present number of inhabitants. How many millions less of men at that time, than now! And how abundantly must they have been multiplied since! And yet, the forests which extend from Germany to the north-east of Asia, and those that remain still in Africa and America, prove, that the earth is not as well peopled as it might be. The further we go back into antiquity, the less we shall find the world peopled, and the earth cultivated; till we arrive at the epoch of the birth of the human race. It is therefore impossible, that our globe should have been eternal; for, had it been so, it must have been as well peopled from time, immemorial, as it is at present.

All these considerations lead us to him, who is the Creator of the heavens and the earth. From him, the

world and its inhabitants, derive their being. All things were made by him, and he was, before worlds or creatures existed: and shall be eternally the same, when new worlds, and new earths, shall be produced, And shall not we also live for ever! Delightful and transporting thought! When the heavens shall pass away, I shall remain! And while eternity rolls on, I shall be found in the realms of beatitude!

DECEMBER III.

THE UTILITY OF DIFFERENT KINDS OF TIMBER.

However great and numerous the advantages may be, which we derive from every part of a tree; yet there is none that can be compared with that which the wood itself affords us. It grows in such abundance, that we may justly say, God every day provides a new supply, that we might never be destitute of so useful a substance. It answers every end we wish to accomplish by it. It is pliant enough to take every sort of form we desire: and rigid enough to keep that form we have given it: and as it is easily sawed, bent, and polished, it furnishes us with many utensils, conveniencies, and ornaments.

But these are far from being the most important advantages, as the greater part relate only to purposes of convenience and luxury; we have wants of a more pressing nature, which we could not supply, had not wood a proper degree of thickness and solidity. Na-

ture, it is true, supplies us with a great many heavy and compact bodies; we have common stone and marble, which we may apply to various uses; but it is so difficult to raise them out of their quarries, to drag, and hew them, that they become very expensive; whereas we can, with much less trouble and cost, procure the largest trees. Wooden piles, from sixty to ninety feet long, sunk down in the earth, make a sure foundation for walls, which without this precaution, would sink into the clay, or tumble down where the foundation was sandy. These piles, forcibly driven down and made firm, constitute a forest of immoveable and incorruptible trees, which support the most heavy and extensive buildings, other pieces support the stone-work, and all the weight of tiles, lead, &c. which form the roofs of our houses.

Wood is also a preservative of life, as it is with many, the principal fuel, without which, they could neither preserve life, nor supply one half of their necessities. It is true, that the sun is the soul of nature: but, it is impossible for us so to collect his rays, as to dress our food, or melt our metals. Fire-wood in some measure, supplies the place of the sun; and the regulation of the degrees of heat depend on our own choice. The long nights of winter, the cold mists and the north wind, would freeze our blood, were we deprived of the comfortable heat produced by wood. How necessary then is wood; and was it not for the wisest purposes that the Creator of the world has covered so great a part of the earth's surface with forests?

But, do we consider wood in its various uses, as a

blessing from God? Have we properly reflected on the benefits we derive from it, and acknowledged that they contribute much to our wellbeing? Or, because these blessings are so common, have we not considered them as of little importance? It is true, that we can get wood more easily than gold or diamonds: but, is it on this account, a less peculiar blessing of Providence? Are we under less obligations to return thanks to God for it: or is it not this very abundance, and the ease with which it is acquired, which should excite us so much the more to magnify the Creator for this precious gift; the quantity of which, is proportioned to our necessities? These reflections may become a fruitful source of thanksgiving, if we only accustom ourselves to indulge them in a lively, serious manner. The winter would furnish us with many blessed exercises of piety, were it our delight to meditate on the mercies of God; and especially on those which he grants us at this season. While reflecting on the warmth, which wood affords us in countries where pit coal is not to be found, would it not be natural to expect, that we should thus address ourselves to God: "Compassionate Father! This also is one of thy blessings: I receive it from thy hand, with a lively sense of gratitude; and I acknowledge thy providential care in this gentle warmth by which my frozen limbs are invigorated. Whether I feel the scorching days of summer, or the piercing cold of winter; whether I breathe in the open air, or in a warm apartment, thou always shewest thyself my benefactor. O, let me not forget any of thy mercies! And, as in each season of

the year, I receive peculiar marks of thy goodness, may I glorify and bless thee at all times! Let me never consider even fire-wood, with indifference; but, may the use which I make of it, be a constant motive to induce me to exalt thy goodness!" These devout reflections are so far from being unnatural, that it would be utterly inconsistent both with religion and reason, were they not frequently cultivated in our minds.

DECEMBER IV.

REMARKABLE PROPERTIES OF CERTAIN ANIMALS.

We daily enjoy a variety of advantages which we derive from certain animals. The Creator has given us some to live in a state of society with us, and others to nourish us: and all are designed in one way or other, to minister to our necessities or pleasures.

The *dog*, is far from being a despicable animal. Independently of the beauty of his form, his vivacity, strength and swiftness; he has all those internal qualities, which may attract the notice of man. He possesses exquisitely tender feelings, which education still improves, and which render him worthy of being a companion for man. He knows how to promote his designs, watch for his safety, defend and flatter him by turns, and by assiduous services, and repeated caresses, render himself pleasing to his master. Without the assistance of this faithful domestic, man could

not so easily vanquish and tame the other animals. In a word, it seems as if God had given the dog to man, to serve as a companion, a help, and a guard. This very interesting animal, merits our attention in other respects, and particularly in this, that he performs several actions, which prove he is not a simple machine: but, that he possesses a self-moving principle. How expressive are the signs, by which he manifests his joy at his master's return! But, these signs are widely different from those which he discovers, when he sees a thief, or a wolf; or when he is pursuing a hare. What cautious ardour, what cunning and prudence, do we observe in all his motions!

The advantages which we derive from the *sheep*, are still more considerable, although it has not the gift of pleasing, like the dog. Every part of the sheep, is useful; its milk, wool, flesh, and even its bones. What is most remarkable in this animal is, that it ruminates, or chews the cud. As it swallows its food hastily without sufficiently chewing it, it can bring it up again, rechew, and swallow it a second time. The cause of this is, it having but one row of teeth: but, this defect is compensated by the multiplicity of its stomachs. Of these, the sheep has *four*. In the first, which is called the *Paunch*, and is very large, the food which is raw and almost whole, is a little moistened. The second, which is named the *Cap*, or *Hood*, is much smaller; in it, the food is better macerated, and digestion begins to make some progress. From this, it passes into the third stomach, called the *Leaf*, or *Folds;* in this it continues till it is properly

soaked and dissolved; for, this intestine is composed of many folds or leaves, which permit nothing to pass but what is fluid. Finally, the digestion is perfected in the fourth stomach, which is called the *Rennet-bag:* in this the food changes its colour, and becomes as white as milk; though in the third stomach it was quite green.

The *hare* is neither destitute of instinct to provide for its own support, nor sagacity to escape from its enemies. It makes its own *form*, or bed; and in winter chooses those places which are exposed to the South; and in summer to the North. In order to hide itself, its squats in furrows, or between hillocks; which are nearly the colour of its own fur. When it is hunted, it runs for a while rapidly forward; then it returns on its own steps, throws itself into bye-paths, and after many leaps and doublings, hides itself in the trunk of a tree, or in a bush. It has cunning enough to change the place of its residence continually, according to circumstances.

The *stag* has more cunning and subtlety even than the hare; and gives still more trouble to the huntsman. Its elegant light form, its slender well proportioned shape, its branching horns, which serve it more for ornament than defence; its size, swiftness, and strength, distinguish it from all the inhabitants of the woods: and it seems to have been made to embellish and enliven the solitude of the forests.

When we reflect on these, and innumerable other animals, we must acknowledge more and more, with what goodness the Lord has provided for our support,

convenience and pleasure. Our globe is the habitation of a multitude of creatures, which are in general subjected to man, and exist only for his service. And if the soil is so diversified, it is that a greater number of living creatures may find aliments suited to their respective natures. Are not all kinds of soils, the good and the bad, the sandy and the marshy, the rocky and the clayey, from the canks of the rivers to the tops of the mountains, stocked with animals, which are in one way or other useful to man? *Fowls* are fed with the fragments from our tables, from which we derive great advantages. The delicate flesh of *pigeons* pays us with interest for the expence we are at in procuring them convenient and safe retreats. *Swans* free our ponds from a multitude of plants which would corrupt there. Hosts of *ducks* and *geese* yield their feathers to us for beds: and they only ask, as a return for their spoils, a little poor food, and a pond where they may wash, play, dive, and seek for worms.

In a word, there is no place, how parched or barren soever it may be, but produces various animals, which are useful to man. Can we then forget the riches of the Divine goodness? The sight alone of the animals which have been created for our use, is sufficient to make us blush with confusion. Let us not receive these benefits with an insensible heart. In all the gifts of nature, let us taste and see that God is good; and ever use his mercies with a heart penetrated with gratitude. "The earth presents itself to our eyes, as the domain which thou hast assigned us; every surrounding object of which was made for our use! Lord,

what is man that thou art mindful of him, and the son of man that thou thus carest for him? Though he be a little lower than the angels, yet he is thy child. Thou makest him a partaker of thy happiness; thou crownest him with glory and honour: thou hast put all things under his sway; and the whole creation honours, and acknowledges him for its monarch. The fierce bull, whose bellowings are heard from afar; the gentle sheep, the wild beasts which traverse and adorn our forests; the fowls which people the air; and the shoals of fish which fill the rivers and the sea; all are obedient to his will; and all were created for his use."

DECEMBER V.

THE FORMATION OF SNOW.

SNOW is a species of *hoarfrost*, differing only in this, that the hoarfrost falls in the form of dew on the surface of certain cold bodies, which attract its humidity, and to which it remains fixed; whereas snow is formed before it falls, by congealed vapours in the middle region of the air: which vapours follow the same laws in falling, as fogs, dew, and rain. The air is often excessively cold: and this cold may sometimes be considerably increased by the density of the atmosphere, and by the accession of acid vapours. It is therefore easy to comprehend, how the aqueous particles become congealed. But, what contributes perhaps more than any other thing to give that freezing

property to the air, are the clouds: for in general, every snowy day is a cloudy one: now, the denser the clouds are, the more they intercept the sun's rays, and prevent their action. In consequence of this, the cold may become intense enough to cause the vapours to lose their fluidity, and convert them into snow. But, from the same reason, should we not sometimes have snow in summer? It may undoubtedly happen, that even in the midst of summer, snow may be formed in the higher regions of the atmosphere. But, it is never sufficiently cold in this season, so as to prevent the icy particles from melting in their passage through the lower regions of the air: therefore they cannot appear to us under the form of snow. But, this is not the case in winter; as it is then very cold, even in the lower regions of the atmosphere, and on the earth's surface; and, as the congealed vapours cannot receive in their fall, sufficient warmth to melt them, they continue to preserve their snowy form.

The shape of the flakes is very remarkable. They generally resemble little stars of six equal rays. It is difficult to assign a reason for this regular figure. Perhaps the cause ought to be sought for in the saline particles which float in the air; and which becoming united to the snow, cause it to crystalize: and then the congealed vapours assembling round these saline particles, which serve them as a sort of nucleus, they assume the hexagonal form. When the lower air is very cold, these little stars fall separately; but when the air is more temperate or moist, they melt a little, and coming into contact, freeze together, and thus

form flakes of different sizes, according to the number of stars which happen to meet together. This is the reason why the snow never falls in large flakes, when the cold is intense.

An attentive observer cannot help admiring the Divine power and wisdom, when he considers that the most exact proportions, and the most perfect regularity are attended to, even in the formation of the particles of snow! How great would our surprise be, were we to see them for the first time, and be told that this brilliant meteor was owing to some vapours in the atmosphere! How suddenly does that snow with which we are encompassed, fall without our having foreseen it! What a multitude of flakes fall from the atmosphere, throng one another, and in a few minutes cover the ground! While this presents a pleasing object to the eye, and abundant matter of reflection to the mind, it is well calculated to justify what the pious *Brookes* has said. "Frost and snow have their charms; and the winter its sweets. Pure and innocent pleasure can never be unknown, except to those stupid men who reflect upon nothing; and pay no attention to the works of the Lord."

DECEMBER VI.

WINTER PLANTS.

It is a mistaken opinion, that winter is in general destructive to plants and trees. On the contrary, it is certain that the variations of heat and cold contribute much to the propagation and increase of vegetables.

Winter Plants.

In warm climates, there are immense deserts which would be still more barren, if cold did not succeed to the burning heats. The winter, far from being prejudicial to the fertility of the earth, favours and increases it. Cold countries have (notwithstanding their snows and frosts), plants which thrive well. A great many trees, as for example, the *Fir*, the *Pine*, the *Juniper*, the *Cedar*, the *Box*, and the *Larch*, grow as well in winter as in other seasons: and this was necessary, that the forests might furnish us with a sufficiency of wood and fruit. *House-leek*, *Stone Fern*, *Sage*, *Marjoram*, *Thyme*, *Lavender*, *Dwarf Wormwood*, and other similar plants, preserve their verdure during the winter. There are also certain flowers, which grow under the snow. The *single Anemone*, the early *Hellebore*, the *Cowslip*, the *Primrose*, the *Winter Hyacinth*, the *Narcissus*, the *Snowdrop*, and all sorts of *mosses* grow green, and flourish in the cold. Botanists assure us, that the plants of the Frigid Zone, if put in a greenhouse, cannot bear a heat of more than 38 degrees: that they bear the cold so well, that they grow in *Sweden* during the winter; as well as in most parts of *France*, *Germany*, *Russia*, and the northern parts of *China*. Vegetables of excessively cold climates cannot resist the heat: nor can those which grow on the tops of very high mountains in any country. Mountains and rocks, whose tops are covered with snow during the whole year, are not without their peculiar plants. On the rocks of *Lapland*, many of those vegetables grow, which are found on the *Alps* and *Pyrenees*; on *Mount Olympus*, and in *Spitz*

bergen, but no where else. When they are planted in a garden, they grow very tall; but bear little fruit. Few of the plants, which thrive best in the northern countries, can come to any perfection without snow.

Thus, in the vast garden of nature, there is no soil which is entirely barren. From the finest mould, to the hardest rocks; from the warmest countries under the Line, to the coldest climates of the North Pole, there is no kind of soil, but what produces plants peculiar to itself. And there is no season absolutely without flowers and fruit.

Merciful Creator! Permit us not, even in this severe season, to forget thy paternal care; and let us not close our eyes to the blessings, which thou hast so liberally bestowed upon us! Were we as attentive as we should be, to the government of thy Divine providence, we should at all times, and in all places, find motives sufficient to induce us to remember with gratitude, the wisdom and goodness of thy conduct towards us. Nature is never either idle or barren. In all seasons it continues its labour: grant, gracious God, that it may be the same with us, in every stage of life! And should we be permitted to arrive at old age; let us neither be unfruitful, nor uninstructive to the world!

DECEMBER VII.

AN EXHORTATION TO REMEMBER THE POOR DURING THE SEVERITY OF THE WINTER.

You, who are sitting quietly in convenient and comfortable apartments; who hear the keen North wind whistle round your dwellings; reflect on the

state of many of your unhappy fellow-creatures, who are at present suffering the utmost severity of cold and poverty. "Happy they, who in this rigorous season, have a house to shelter them, clothes to keep them warm, wholesome bread, and the fruit of the vine to cheer and strengthen them; and a soft and comfortable bed, on which they may rest, and enjoy pleasing dreams. But, unhappy the poor man, to whom adversity refuses the necessary shelter; without clothing to keep him from the cold; often extended on a bed of sorrows, and too modest to make his necessities known." How deeply should we feel the misery of such people! Let us attend to those objects of compassion, who come to our doors:—how many are feebly crawling through the streets, tormented with hunger and cold! How many old people, with scarcely enough to cover their shivering limbs! Exposing themselves for hours together to all the inclemency of the season, in order to solicit the smallest donation from those who pass by! How many sick people are there without food or medicine; lying on beds of straw, in miserable cabins, cellars, and garrets, where the wind, the cold, and the snow, are their principal visitants!

Winter renders charity to the poor still more necessary; because, in this season, their wants are increased. Is not this the time, when even nature itself is impoverished? And will it not add a double value to our benefactions, to distribute them seasonably? If the summer and autumn have enriched us with their produce; is it not that we might share these blessings with our brethren, now, that nature is at rest? The

more the cold increases, the more we should be disposed to relieve the necessitous; to pour into the bosom of the indigent a part of the surplus which we have amassed. What other intention could Divine Providence have in its unequal distribution of worldly good, but to put it into the power of the affluent to feel for, and relieve the necessities of their fellow-creatures?

Let us have pity therefore upon the poor; and not permit them to suffer even more than the brutes do! It is our duty to mitigate their sufferings: Providence has condescended to grant us that honour. Let the rich understand, that it is their duty and privilege to feed, clothe, warm, and cherish the distressed: to support them in their sufferings, and to snatch them from death. Let those who have abundance, share of that abundance; and let those who have but little, give of that little. One can scarcely be so poor, as not to be able to do some good. Let us taste the sweetest satisfaction that a noble mind can feel; the divine pleasure of providing for the necessities of the poor; of sweetening to them the rigours of winter, and lessening the pressure of adversity. Who can withhold from himself the consolation of relieving the wants of the destitute; which in so many cases, may be so easily effected? We need only retract a few of our expences in food, raiment, and pleasures. What a blessed offering would this be to God, were our beneficence to be accompanied with a victory over our passions, in retrenching the expence occasioned by luxury and vanity, in order to apply it to the relief of the poor!

An Exhortation to remember the Poor during the Winter.

Let each strive, during these winter days, to relieve as far as he possibly can, the misery of his fellow-creatures. Let our comforts and conveniencies cause us often to think of those, who are destitute of the greater part of the sweets of life. In comparing our situation with that of others, we shall feel more powerfully our own happiness, and bless God with redoubled fervor for the great comfort we enjoy. Then, if the charitable disposition of our heart be not depraved by the world, or corrupted by passion, we shall be led to make as many happy as we possibly can; and to alleviate those ills, which we cannot entirely cure. We should frequently ask ourselves: What are the comforts which we desire, in this inclement season? They are the very same which we should, if possible, procure for our indigent brethren. Do we know any, who have not sufficient clothing to preserve them from the cold: if so, should we not employ that part of our garments which only minister to luxury or pride, to clothe, or procure clothing for them? Do we sleep on a comfortable bed, while so many of our fellow-creatures are without any? Should we not then be willing to lie less comfortably, in order to procure the restless and destitute, some refreshing sleep? Do *we* feel the cheering warmth of a comfortable dwelling? Why then should so many others shiver with cold?—Should we not make use of the most effectual and speedy means in our power, to alleviate their distresses and to sweeten the bitterness of their lot?

DECEMBER VIII.

NATURE IS A SCHOOL FOR THE HEART.

In every respect, the study of nature is profitable: with propriety it may be called *a school for the heart;* seeing it, in a certain sense, teaches us the duty we owe to God, to our neighbour, and to ourselves.

Can any thing inspire a deeper veneration for the Supreme Being, than the reflection, that it is he who has not only formed the globe of the earth out of nothing, and suspended it in the empty space with all the creatures it contains; but whose mighty hand also confines the sun in his place, and the sea within its shores: can we humble ourselves too much, in the presence of that Being, who has created the innumerable worlds, which roll above our heads! What despicable creatures are we, when compared with those immense globes! And how mean does the earth, and all its glory appear, when considered in this point of view? Should we not shudder, at the bare thought of offending this God, whose unbounded power every moment meets our eyes; and who can, with one look, destroy, or render us the most miserable of all his creatures! But the contemplation of nature is also blessedly calculated to fill us with love and gratitude to its Author. All nature, with a loud voice proclaims this consolitary truth,—GOD IS LOVE. It was this love that induced God to manifest his glory in the creation of the world; and to communicate to other beings a portion of that felicity, which himself enjoyed. On this account he created the universe,

and an innumerable multitude of beings, that all from the archangel to the worm, might prove, according to its nature, and capacity, and might feel the effects of the Divine goodness. Is there a creature, which does not exhibit proofs of this amazing goodness?

But we ourselves are particular instances of it:—The Creator has endued us with reason, not only to enable us to enjoy his benefits; but to acknowledge and feel that love with which he has honoured us; and which infinitely increases the value of all his blessings. He has decreed, that man should rule over the animals, and make them subservient to his wants and conveniencies. It is for us the earth produces fruit in such abundance. From him we receive those innumerable daily benefits, to which we owe the continuance of our lives. His love is disinterested; for, he can receive nothing from his creatures: his felicity can admit of no increase. Can these considerations fail to affect us, to excite our gratitude, and to engage us to return love for love to our beneficent Creator? Lastly, the contemplation of the universe, and the perfections of God, which are manifested in it with so much splendor, should naturally increase our confidence in him. How great should our tranquillity be, when we consider that our lot is in the hands of that Being, of whose power, wisdom, and goodness, we have as many proofs as we have creatures before our eyes? Can there happen any perplexity, embarrassment, or danger, from which we cannot be delivered by the hands of him who stretched out the heavens and formed all his creatures in so admirable a manner?

And need any thing prevent us from having recourse to him in all our necessities and tribulations; with the full assurance that he will hear our prayers?

Is it possible for mean and selfish sentiments to lodge in the heart of that man, who in contemplating nature, discovers every where, the footsteps of the infinite beneficence of that Great Being, who does not propose less the particular happiness of each individual, than the general good of the universe. Even a superficial contemplation of the ways of Providence, must deeply impress the mind with a sense of the goodness of God; and his tender concern for all that exists. And the heart must be extremely depraved, which under a conviction of this universal beneficence of the Creator, is not inspired with the determination to imitate him. Should we not according to the divine example, feel sincere goodwill to all his creatures. "God causeth his sun to rise on the evil and the good; and sendeth his rain on the just and unjust." Can we then exclude any from our charity; or be partial in the distribution of its effects? God loves the little as well as the great; the poor as well as the rich; and he does good invariably to all. If, therefore, we wish to imitate our heavenly Father, should we not endeavour to get a love as general and disinterested lighted up in our hearts?

Finally, when we contemplate the admirable order and harmony which reign through all nature, should we not be led to pray that the dispositions of our minds might resemble it? If we be well convinced that nothing can please God, which is not according to order;

should we not apply ourselves with all our power, to be conformed to his will? How despicable should we be even in our own eyes, if, through our fault we produce any derangement in the admirable plan of nature? God wills our perfection: should we not feel ourselves obliged to be conformed to his merciful designs; and in order to this, make a proper use of every mean which nature and grace have afforded us? This should henceforth be our great, our principal occupation. As often as we discover any irregularity in our hearts, or ways, we should incessantly labour to have it corrected, and thus be workers together with the saving influences of the Spirit of God.

Thus nature may become an excellent school for the heart. Should we not be attentive to its instructions; and profit by them in a teachable spirit? Here we may learn true wisdom, that wisdom which is never accompanied with disgust, or irksomeness: we may learn to know God, and find in this blessed knowledge, the foretastes of paradise. Thus our days may pass sweetly away, till we are introduced into that world, where we shall no longer be confined to the first rudiments of science; but where our knowledge and holiness shall be more and more perfected through all eternity.

Note.—The above may do very well in its place: but without the assistance of Divine Revelation, no man can thoroughly know the only true God, and Jesus Christ whom he has sent: whom to know, as the scripture has revealed him, is life everlasting. *A. C.*

DECEMBER IX.

THE DIVINE GOODNESS MANIFESTED TO US, EVEN IN THINGS WHICH APPEAR HURTFUL.

Most people wish that they were not exposed to any evil in this world. If they had their choice, and could dispose their lot at pleasure, they would endeavour to secure to themselves a life exempt from all kinds of trouble and affliction. But, is it really true that we should certainly be happy, if nothing happened to disturb our worldly prosperity and repose; and that we should, during the course of our lives, be exempt from all disagreeable occurrences? This question, on the decision of which, our happiness here below so materially depends, deserves to be examined with care; at the same time guarding, as much as possible, against the illusions of self-love.

Should we be really happy, were we to enjoy uninterrupted prosperity in this world? I think not. Constant prosperity would soon grow insipid: and disgust would change our felicity into real misery. On the contrary, the evils which we sometimes suffer, enhance the value of our blessings: as colours are relieved and set off by shades. Were there no winter, would we be so affected as we are by the charms of spring? Can we know the value of health, without sickness; the sweets of rest, without the pains of labour; the peace and consolations of a good conscience, if we had never been tempted and tried? The more obstacles are opposed to our happiness, the greater is

our joy, when we have been enabled to surmount them. The heavier our calamities are, the more happy we feel when delivered from them: and the satisfaction which, in such cases, we often feel, makes us shed tears of joy. Besides, if the afflictions of which we complain did not happen, we should certainly be exposed to incomparably greater evils. If all our days were prosperous, we should soon be lost in pride, luxury, and ambition. If we were never pressed by want, none would take the trouble of being active and laborious in his vocation. None would exercise his talents, or cultivate his mind: and none would be animated with zeal for the public good.

If we were never exposed to danger, how should we become prudent; and how could we learn to feel for those whose lives are exposed to danger? Had we no ills to apprehend, intoxicated with prosperity, we should easily forget gratitude to God, charity to our neighbour, and all our duties in general. Are not then these virtues, these mental accomplishments, a thousand times preferable to a continual train of agreeable sensations from outward prosperity, which would soon appear dull and insipid, because uninterruptedly enjoyed. "He who always reposes in the lap of prosperity, soon becomes backward to all good; and incapable of performing any great action: but let him feel the strokes of adversity, and he will return to wisdom, activity, and virtue."

How unjust and inconsistent are the desires of men! They wish to live quiet, contented, and happy; and are discontented with the means which lead to the ac-

complishment of their own desires! In the heats of summer, we pant for the refreshing breeze; and yet we are displeased with the storm that cools and refreshes the air. Thunder purifies the atmosphere, and renders the earth fruitful; yet we complain that the flashes of lightning terrify our minds. We acknowledge the use of coal, sulphur, minerals, and warm baths; but we do not like earthquakes. We wish that there were no contagious nor epidemic disorders, and yet we complain of those tempests which prevent that corruption of the air which produces them. We wish to have servants; and yet we desire that there should be neither poverty, nor an inequality of station in the world. In a word, we wish to have every end accomplished, without the use of the means which lead to it.

Acknowledge, O man, the wise and beneficent designs of thy God; even when he permits thee to feel the frequent vicissitudes of joy and sorrow, of prosperity and adversity. Is he not the Arbiter of our lot:—the Master who can punish or reward:—the Father, from whose tender love, even our chastisements themselves must come? Are we not in a world one peculiar characteristic of which is, to be subject to continual changes and revolutions? Have we not often found in the course of our life, that what our ignorance considered as an evil, really contributed to our true happiness? Let us therefore, receive with meekness from the hand of God, those afflictions which he thinks proper to dispense. They appear dreadful only in their beginnings: but the more we are exer-

cised by them, the more supportable we shall find them, and experience their most salutary effects. If in adversity, we have faith and patience, we shall in the end be enabled to bless God for the afflictions he has sent us. However it may be, we shall certainly bless him in eternity for all our sufferings. There, we shall form a different judgment of the troubles we have passed through here below. We shall then see, that without the afflictions, of which we now complain, we should never have arrived at that state of felicity, which God has designed for us. " There, our complaints and our sorrows shall cease for ever. There, transported with gratitude and joy, we shall offer songs of praise and thanksgiving to God, for all the afflictions we have patiently suffered here below. There, we shall exclaim in holy ecstacy: All is finished, all is well! God has done all things in infinite goodness and mercy."

DECEMBER X.

CASUAL REVOLUTIONS IN OUR GLOBE.

NATURE of itself, is continually producing changes on the surface of the earth, which have a great influence on the whole globe. Many ancient monuments prove, that in various places its surface sinks down, at some times suddenly; at others gradually. The wall built by the Romans, in the second century, between the river *Forth*, and the river *Clyde* across *Scotland*, is at present almost entirely buried under ground; remains of which are daily discovered.

Mountains, those pillars of the earth, are exposed to similar ruin; occasioned sometimes by the nature of the soil; at other times by water, which sap their foundations; and lastly, by subterranean fires. But, if some parts of the globe sink down, others on the contrary, become more elevated. A fruitful valley at the end of a century, may be converted into a marsh, where clay, turf, and other substances, form layers upon each other. Lakes and gulfs are converted into dry land. In stagnant waters, rushes, weeds, and different plants grow: animal and vegetable substances putrefy in them; and gradually form a kind of mud and mould; and the bottom rises up so, that solid earth takes the place of water.

Subterraneous fires also, produce great changes on our globe. The effects are perceived by three different commotions, which are generally felt separately; but which sometimes come all together. The first consists in a horizontal motion, forwards and backwards. When these oscillations are violent and unequal; they throw down buildings, and change the surface of the ground. This kind of undulatory motion may be easily discerned in the water. There are other earthquakes, called *Shocks*, or *Tossings*. These sometimes cause new islands to arise suddenly from the bottom of the sea. The outward crust of the earth being violently pushed up, falls down lower than before, breaks into chasms, and thus forms lakes, marshes and springs. Lastly, there are explosions similar to those of mines, accompanied with inflammable matter. These violent shocks and convulsions,

often cause great devastations; and make considerable changes on the surface of our planet. The outward crust of the earth cleaves in different places; sinks on one hand, and rises on the other. The sea partakes of these commotions: but the most sensible effect which we perceive in it, is the formation of new islands. They are produced by the elevation of the bottom of the sea; or are composed of pummice-stones, calcined rocks, or other matters projected from volcanos. History informs us, that though earth-quakes, produced by subterranean fires, whole cities have been swallowed up, and buried sixty feet deep; so that the earth that covered them became afterwards arable ground.

Many other alterations, produced on our globe, have been occasioned by the motion of waters. Heavy rains soak into the mountains, and wash away a great deal of earth; which being swept down into rivers, and into the sea, raise the bottom of them consider-ably. Rivers also change their course: coasts them-selves are sometimes displaced. Sometimes the sea retires, and leaves whole countries dry, which were before its bed: at other times, it gains on the land, and whole districts are inundated. Places which were formerly contiguous to the sea, are now a great dis-tance from it. Anchors, and vast iron rings to moor vessels, and the remains of ships which are found on the mountains and marshes, at a great distance from the sea, incontestably prove, that many places for-merly covered by the sea, are at present solid land. There is every appearance that England was once

joined to France: the beds of earth and stone which are the same on each side of the streight between *Dover* and *Calais*, and the shallowness of the sea between those two places, seem strong indications of this. Climates also, produce great alterations on the globe. Between the Tropics, the heats and rains are alternate. In some places it rains for several months together: and at other times the heat is excessive. The countries in the vinicity of the Pole, undergo great changes, through the intenseness of the cold. In autumn the water penetrates through a multitude of little crevices in the rocks and mountains: there it freezes in winter, and the ice dilating and bursting makes great havock.

Such revolutions, produced by accidental causes, are palpable proofs of the frailty of the earth itself. They prove also, that God is not an idle spectator of the alterations which take place on our globe; but, that he has arranged, and continues to direct every thing according to infinitely wise laws. Hence we may also learn, that all things here below, are subject to continual vicissitudes. We see even, that frequent accidental revolutions cause not only the inanimate but all the animate world to assume a new appearance. One generation disappears and gives place to another. Some rise to dignities and honours, while others fall into misery and contempt. There are continual changes and migrations among the different creatures: and various gradations in their condition and faculties, God has allotted to all beings different periods of duration: some are appointed to a short and momentary

existence, others to a long life, and others to an endless duration. In all this, how evidently do the wisdom, power, and goodness of the Creator shine forth!

DECEMBER XI.

GRATITUDE FOR OUR CLOTHING.

PROVIDENCE manifests itself even in our clothing. How many animals give us their hair, wool, fur, or skins to cover us! The sheep alone with its wool, furnishes the most necessary part of our dress: and it is to the valuable labours of a Worm, that we owe our silks. How many plants also, serve for the same purpose. Hemp and flax, furnish us with linen: and many different stuffs are made out of cotton. But, these vast stores of nature, would not have been sufficient, had not God endowed man with industry, and an inexhaustible fund of invention; and given him hands capable of preparing clothing of different kinds. Let us only reflect on the labour requisite to produce one piece of cloth, and we shall see that it demands the united exertions of a multitude of hands, to prepare even a few yards. How little cause have we to be vain of our dress, seeing we are obliged to have recourse to the most despicable animals for the materials out of which it is made; and to that class of people as workmen, which our pride despises the most.

But, why has the Creator laid us under the necessity of providing for ourselves, while all other animals receive theirs immediately from nature? I answer: this obligation is very advantageous to us: on one

hand, is favourable to our health; and on the other, it is suited to our manner of life. We can thus regulate our garments according to the different seasons of the year; the climate where we live; and particularly, according to the situation or profession we have chosen. Our garments promote insensible perspiration so essential to the preservation of our life. The necessity of procuring them ourselves, exercises the mind, and gives birth to the invention of many arts: and lastly, the labour they require, provides subsistence for a multitude of workmen. We have therefore, the utmost reason to be satisfied with this arrangement ofProvidence. Let us only take care not to forget its design in furnishing us with clothing. A Christian should not seek his glory in the outward ornaments of his body, but in the virtuous dispositions of his souls. The proud person assumes a thousand different forms, and inwardly glories in the most frivolous advantages; attributes excellencies to himself which he has not, or rates too highly, those which he has. As to the outside, some shew their pride in the splendor of silks, gold, and jewels; whilst others nourish it under rags. The true Christian avoids both these excesses. The first is supremely foolish: for, it is degrading to human nature, to seek glory in outward ornaments. We wear clothes to preserve our bodies from the intemperature of air; a precaution which the weakness of man since his fall, has rendered unnecessary, not only for health and decency, but also to distinguish the sexes, and to establish those distinctions which are necessary in the different orders

of society. These are the rational ends for which our garments have been designed, and we should use them only for the fulfilment of these designs.

Let us reflect a little on the state of many of our fellow-creatures, who have scarcely clothes to cover them. Alas! How many are there around us, who are but half clothed; and in these severe winter days, can scarcely shelter themselves from the cold! Let the sight of these miserable people, cause us to have a lively sense of the Divine Goodness, which has enabled us to provide for ourselves with the necessary clothing. As many of those who may read this paper, may have clothing in abundance, let them remember, that there are many very near them, who can scarcely provide themselves a single coat! O ye rich! it is your duty to clothe the naked, and to be unfeignedly thankful to God for the abundance he has given you.

How should we bless our Preserver, for the benefits which in this respect, we have received from his hands? How many suits have we received, how many worn, and how many cast off, from our infant state, until now! In this also, how has God united the useful with the necessary, and the pleasing with the useful! Let us return him thanks for his goodness: and beseech him so to instruct our hearts, that our clothing shall never render us guilty of pride and vanity; that we may delight to clothe the poor, and learn now to unite kindness to humility, and avoid superfluities. Let us learn to get our souls adorned with holiness, seeing this alone, in the sight of the Lord, is of great price. By and by, a shroud shall be

our last covering.—May God grant that at that time, we may be found clothed with salvation, that an abundant entrance may be ministered unto us, into the everlasting kingdom of our God and his Christ.

"Yes, O Father, thou wilt provide! Thou well knowest the necessities of thy children. I will trust in thy goodness, O thou, who powerfully supportest the weak! My hope, O Lord, is all in thee. Let my faith be increased, and my love perfected, day by day!"

DECEMBER XII.

THE CLOTHING OF ANIMALS.

It is a wonderful proof of Divine Providence; that all animals should be naturally provided with coverings, the best suited to their several habitations, and manner of life. Some are covered with *hair;* others with *feathers;* some with *scales;* and others with *shells.* This variety is a sure proof, that a Wise Artist has prepared the clothing of animals; as it is not only adapted in general to the different kinds, but appropriated also to each individual. *Hair* is the most convenient clothing for quadrupeds. Nature, in giving it to them, has so formed the texture of their skin, that they can, without inconvenience, lie on the earth in all kinds of weather, and be employed in the service of man. The thick *fur* of some animals, not only preserves them from wet and cold, but serves also, to cover their young, and provide them with a soft bed. For *fowls,* and certain insects *feathers* are the most convenient covering: for they not only protect them

from cold and wet, but are so disposed, as to support them in the air. On this account, they are spread over the whole body, and their delicate texture is peculiarly favourable to flight. They are light and hollow, and their tubes are fitted with a marrowy substance which strengthens them: and the capillary filaments interwoven with so much art, render them thick enough to endure the heat of the body, preserve them from the intemperature of the air, and give the wings a proper degree of strength.

The clothing of *reptiles*, is perfectly adapted to their manner of life. Observe, for instance, the earth-worm. Its body is formed only of a series of little rings, and each ring is provided with a certain number of muscles, by means of which, the body may be greatly extended or contracted. These creatures have a sort of glutinous juice under their skin, which is perspired, and covers the body with a gluey substance, which enables it to slip the better through the earth, which it could not do, were it covered with hair, feathers, or scales.

The substance which covers *aquatic animals*, is not less suited to the element they dwell in. *Fish* could not possibly have more convenient clothing than *scales:* the form, size, substance, and number, and situation of which, are perfectly adapted to the peculiar manner of life of these animals. Nor could *shellfish*, be better clothed, or better lodged than they are.

That which is particularly remarkable here is, the beauty of these different coverings. The most deformed beasts, whose appearance is the most disagree-

able, have in this respect, their beauty. But, to the principal part of birds and insects, God has dispensed ornaments with the most liberal profusion. Let us only fix our attention on the *butterfly;* its beauty must excite our surprise and admiration. Many of these animals have but simple clothing, and are all of one colour. Others are sparingly ornamented, and others shine with the greatest variety of the most splendid colours. How greatly has nature diversified the beauty and plumage of birds! The little *Colibri,* or *Humming-bird,* an inhabitant of America, is one of the wonders of nature, it is not larger than a great fly, but the plumage is so beautiful, that its neck and wings resemble the rainbow. Its neck is of a bright ruby red: under the belly and wings, it is as yellow as gold: the thighs are as green as an emerald: and the feet and beak polished, and as black as ebony. The males have a little tuft on their heads, composed of all the colours, which adorn the rest of the body. These are worn as pendants, in the ears of the women of Mexico.

It is impossible not to be convinced, that God, in creating birds, had their conveniency, utility, and beauty particularly in view. Every animal has that kind of dress, which is most suitable, and it would be imperfect, were it clothed in any other way. There is nothing wanting, and nothing superfluous: and every thing is so well arranged and finished in such a masterly manner, that no human industry or skill can equal it. Does not all this demonstrate the existence of a Being who has all the treasures of wisdom and

knowledge, joined with an unbounded goodness; who has determined to render each creature, as happy as is consistent with its nature, and the end for which he has formed it?

DECEMBER XIII.

THOUGHTS ON THE RAVAGES OF WINTER.

I HEAR the winds and tempest roar, and my blood freezes in my veins. The gloominess of the day; its almost extinguished light: a disposition in myself to terror and dismay; all concur to render the tumult and disorder which prevail in nature, still more dreadful. How often does the wind overturn cottages, and even palaces; and thus, the labour of years is in an instant destroyed. How often have ships, and the unhappy persons who hazarded their lives on the brittle vessel, been precipitated into the yawning abyss! How often have the sturdy oaks been torn up from the roots! Yet, thou, O Lord, art the Author and Ruler of the storm: the north-wind and the tempest, are thy messengers, the heralds of thy power, and ministers of thy will. They should lead us to fear and adore thee. Didst thou not set bounds to their destructive power, they would every where, and at all times occasion the same devastations. Yet, the poor cottage, notwithstanding the violence of the storm, is still preserved; though unsheltered from the rude blast. Thanks be given to that powerful Being, whose voice silences the winds and the waves. His wisdom has ordained all for the best.

" But, if the world, and all events are his work, and the effect of an infinite wisdom, how can confusion, desolation, and ruin, occasioned by tempests, be permitted to take place? Can perfect wisdom produce any thing but order? And, can perfect goodness design any end, but what is good?" Thus thou inquirest, O man; but what art *thou*, to dispute with God! Shall the creature say to his Creator, why hast thou made me *thus?* But does it follow, because we cannot comprehend and explain every thing, that there are any defects in the works of the Lord? To be able to judge of his works, and the ends he has proposed, we must be equal to him in wisdom and understanding. It is indeed, a real miracle, that we are capable of perceiving, even a little of the order, which he has established; of comprehending a part of the wise and extensive plan which he has executed; and considering the darkness of our understanding, it is astonishing, that things do not appear still more confusedly to us! Alas! All would be disorder and confusion; order, harmony, and happiness, could not exist in the universe, were there not a Being whose wisdom, goodness, and power, infinitely surpassed our conceptions; a Being, who has created the world and all that it contains. All the light, goodness, and felicity which are found in the world, prove the wisdom and goodness of our Creator. And as the general arrangement, and ordinary course of nature, visibly tend only to the good of the creatures; whatever particular accidents may appear contradictory to this design, they prove only our ignorance, and the limited state of our under-

standing. To make *one whole*, out of all the materials of which the visible world is composed, where so many magnificent phænomena are produced; where the various beauties and treasures of light, virtue, and felicity, are displayed before our eyes, is a work so marvellous and divine, that none but a being of infinite wisdom, power, and goodness, could have conceived the idea, or executed the plan.

The more we advance in our researches in nature's works, the more clearly we discern that wisdom and goodness, which have created, and which govern the whole. After having laid down these principles, we shall think differently from what we have done of the ravages of winter. Even the tempests, the snow, the frost, and all that appears disagreeable at this season, are linked together in the eternal order of things. Each thing has its reason, and comes at the determined time; and by means of all these revolutions, the divine wisdom preserves the harmony of the immense whole. The wind, which terrifies the mariner at sea, carries water to dry barren land. The sulphureous vapours, salts, and other matters, driven by the wind, from one country to another, revive the earth, and restore fertility to the fields, covered with stubble, which frequent crops had exhausted. Thus, the winter, which appears so destructive, enables our fields to produce new crops.

At present, the ground, the gardens, and the seeds rest, buried under the snow and ice. The inhabitants of the forests howl more hideously than usual. The beasts are oppressed with hunger. The whole world appears dead. But, the Lord preserves the world,

under this apparent death, and watches our perishing nature. What miracles are wrought in the midst of these terrifying scenes of winter! He feeds and supports the poor; the sparrow which can now no longer find food, lives notwithstanding, in the place of its retreat, on the gifts of God's beneficent hand. The earth, whose fruitful bosom is now shut up, provides no more food; but, his hand, which is ever open, provides the necessaries of life, and he calls into being, the things which do not as yet exist.

"Lord, thou art great! In the most tempestuous seasons thou shewest thyself the mild and compassionate Lord. Thou knowest how to prepare us food from snow and ice: and to enable man to shake off the yoke of pinching cold; thou endowest him with understanding and industry. Thou clothest the naked; thou strengthenest the weak: they live and are prosperous. Teach us to seek thy face, and ever to acknowledge thee as the friend and benefactor of mankind. May thy goodness kindle a holy love in our hearts; such a love as feels no difficulty to extend itself to our most cruel enemy; so that we may clothe him when naked, feed him when hungry, and dry up his tears in the day of his distress! It is right that the world should be ever governed, by the eternal laws, which thou hast prescribed. When, for thy sake, the poor man shares his morsel with him who is utterly destitute; condescend to compensate his labour of love. Thy purpose is everlasting.—While time shall endure, summer and winter, seedtime, and harvest, shall succeed each other, and thy blessing shall rest on the whole creation."

DECEMBER XIII*

THE ORANG-OUTANG.

THE great interval which separates man from the quadrupeds, is filled up by the *ape*, and by those animals which bear the nearest resemblance to the *ape*, the species of which are very numerous and intimately blended. Leaving those which approach nearest to quadrupeds properly such, we insensibly arise by a variety of gradations to a principal and superior species, which has so near a resemblance to the human race, that, from this circumstance, it has received the name of *Orang-Outang*, or *Wild Man*.

If the elephant appear to resemble man by *intelligence;* the *Orang-Outang* bears a nearer resemblance to him, not only in his *external* and *internal structure*, but also in his inclinations and habits, and the various talents which result from them.

The *Orang-Outang* resembles the human being so much, that the anatomist who compares them, seems to compare two individuals of the same *species*, or, at least, of the same *genus;* so that, struck with the numerous and decisive similitudes which he discovers between these two beings, he does not hesitate a moment to place the *Orang-Outang*, immediately after the *Hottentot*.

This animal, the chief and largest of the *ape* kind, appears in effect, to possess all the attributes of humanity, if we except only that grand and most distinguishing characteristic of man, which no other animal shares with him, and which gives him a decided supe-

riority over all *reason* and *speech*. The *Orang-Outang* does not *speak;* therefore he does not *think*, for speech is necessary to thought. He has, notwithstanding, all the exterior organs of speech; and on dissection, his brain appears perfectly to resemble that of man: yet something in the number, figure, or arrangement of the particles of matter in the brain, which corresponds to the *human voice*, must be wanting. This animal has not the capacity of connecting his ideas with those articulate sounds which represent them: nor of associating, or combining them in that infinitely diversified manner which is so evident in man. But though the *Orang-Outang* be not man, yet he is, at least, the most perfect similitude of man on the face of the earth. Indeed this similitude is so complete, that the female has the same periodical evacuation, as the female of the human species. The male is sometimes as tall, and rather lustier than man. Like him, he walks upright, using a staff for the purpose, which he procures for himself: and which he can use well, either in case of self-defence, or in attacking his enemy. With astonishment, we behold him taking his place at table among the guests, unfolding his napkin, and using his knife, fork, and spoon, in the most proper manner. He pours out the liquor into the glass; touches glasses with any of the company when desired: wipes his lips with the napkin; lays the cup and saucer on the table, puts in the sugar, pours out the tea, and then leaves it to cool before he attempts to drink it. Finally shakes hands with the guests, or walks out gravely along with them.

The Orang-Outang.

We are not less surprised to see the *Orang-Outang* lie down in the bed, which himself has previously made: place his head upon the bolster; bind it with a handkerchief; adjust the clothes on him, &c. One who in sickness, had been twice bled in the arm; when afterwards afflicted, presented his arm as if desirous of being relieved by the same treatment.

Very susceptible of instruction, the *Orang-Outang* makes a good servant, and will readily obey either signs or words. If brought up to domestic service, he acquits himself with great propriety and exactness in the different functions assigned to him: rinces the glasses; brings drink; turns the spit; pounds in a mortar whatever is given him to pound; goes to the well of water, fills his pitcher, places it on his head, brings it home, &c.

These animals live in society in the woods: they have both strength and courage sufficient to attack an elephant with their clubs, and compel him to retreat. They even dare to attack an armed man. More industrious than the elephant, they understand how to build huts with interwoven branches, properly adapted to their necessities. Are passionately fond of women; pursue them with vehemence, embrace them when they catch them; feed, and take the utmost care of them.

The female is affectionately attached to her young; carries it in her arms; gives it the breast, provides for all its necessities, and defends it with great courage.

I almost scruple to insert here, a last trait of the

instinct of the *Orang-Outang*, which at first view might appear more proper for *fable*, than history; but which we have received from a celebrated traveller, and with which the great Historian of nature has not disdained to enrich his work. When the *Orang-Outang* finds no more fruits on the mountains, or in the woods, he goes to the sea-coast, in search of a very large species of oyster, of several pounds weight, which he often finds *gaping* on the shore: but the circumspect animal fearing lest the oyster in closing his shell, should catch hold of his hand, very adroitly puts in a stone, which hindering the shells from closing, permits him to take out and eat the fish at his ease!

How manifold and beneficent is the wisdom of God! What an endless diversity in the works of his hands! Nature never proceeds by leaps: what an enormous distance separates the man from the dog! and yet between the man and dog the links of the chain are uninterrupted. In proceeding along this chain, the contemplator of nature arrives at last, with astonishment, at a being so similar to *man*, that the characteristics which distinguish them, seem less to be specific differences, than simple varieties! Reader, God has distinguished thee from the animal in question, by reason and speech: he has also given thee an immortal soul: he has made thee lord of this lower world; and rendered thee capable of infinite happiness: submit to him who is Lord of the universe; and devote all thy powers unreservedly to his glory!

DECEMBER XIV.

SAGACITY OF ANIMALS IN PROCURING THEIR WINTER'S SUBSISTENCE.

THERE are some animals, which lay up stores for winter; and in harvest time make provision for six months. It seems as if they foresaw a season, when they could not collect food; and made use of this precaution for their future support: besides, they can calculate exactly what will be necessary, not only for their own consumption, but also for that of their family. *Bees* are almost the only insects, which lay up provisions for winter. They use their wax with astonishing œconomy; as they know they can collect no more after the season of flowers is over; and have no other resource for their subsistence, and the construction of their cells, than the collection which they have already made. Their prudence directs them to collect another sort of matter, which they need, to keep the cold out of their hives: this is a glutinous substance, which they collect from flowers and bitter plants; and which they employ in stopping up closely, every crevice in their hives. Their œconomy may be seen even in the smallest matters. They waste nothing; and that which they need not at present, they reserve for the future. Those who have carefully examined them assure us, that when in winter they uncover their cells to come at the honey, they carry off the wax with which they were closed, and lay it up for future use.

Among quadrupeds, the *Hamster*, and *Field Mouse* lay up provision for winter: and in harvest time carry a quantity of grain into their subterraneous dwellings.

Sagacity of Animals in procuring their Winter's Subsistence.

Among Birds, *Magpies* and *Jays* gather heaps of acorns in autumn, and keep them for winter in hollow trees. As to those animals which sleep during the winter, they make no provision: this to them would be useless. But the others not only provide for the present, but also for the future. Each in the time of abundance provides against the time of want. And, it has never been known, that the provisions which they then collected were insufficient for their winter's maintenance.

These œconomic cares cannot be considered as the fruit of reflection; as this would be to attribute to them much more intelligence than they really possess. It is probable, that they only think of the present, and of what affects their senses, either in an agreeable, or disagreeable manner. And, if the present influences them in reference to the future, this is without design, and without their having any knowledge of what they do. How can we suppose that there can be any foresight, or reflection, in this instinct of animals, seeing they have experience of the vicissitudes of seasons, and the nature of winter: and that having no idea of the measure of time, it is impossible for them to know when the winter will come, or how long it shall last. Nor can we attribute to them any reasoning, or ideas concerning the future; nor imagine that they seek the means of subsistence during the severe season, from reflection; seeing they ever act the same way without any variation; and that each species follows constantly and naturally the same method, without having been previously taught it.

When, for example, the working bees continue to collect that honey and wax, with which they fill their hives, as long as the season will permit them: it is not because they foresee that a time will come in which they shall not be able to collect any: such foresight cannot be attributed to them: how can creatures which have only sensual perceptions, judge of futurity? But, every thing has been so ordered, that the bees find provision made, notwithstanding they made the collection without design. They are led by Providence to gather wax and honey: they labour at this, during the fine weather; and when winter comes, they find their magazines full. These animals, as well as all others, act blindly, and almost mechanically, without reflection or design; although they appear to conduct themselves according to the wisest and most prudential rules. Therefore, being destitute of reason, this wise œconomy, these acts of apparent foresight and reflection, which we remark in them, must be produced by a superior intelligence, who has thought of, and cares for them; and whose views they fulfil without knowing it.

In this consists part of our superiority over the brute creation. We can present the past and the future to our minds: we can act from reflection, and form plans: we can determine through motives, and choose what is most suitable. But, how necessary is it that we should make a proper use of these prerogatives! Informed as we are, of the great revolutions which await us; and being enabled to look forward to the winter of our life; should we not lay up a good store

of well-founded hopes and consolations, which might render our latter days not only supportable, but happy? No sight can be more afflicting, than to see an old man, who in the days of his youth had lived without care or foresight; and who, now that his winter is come, is destitute of all comfort; and whose state is more humiliating because he has deserved it. Let us not act in this inconsiderate manner: but henceforth, after the example of a wise œconomist, let us ever have the future before our eyes, and prepare for it. Let us, without delay, adopt those measures which may secure our comfort in old age, and our happiness to eternity!

DECEMBER XV.

THE ADVANTAGES OF WINTER.

Let us reflect on the blessings which God grants us in this rigorous season. The cold and frost retain many noxious vapours in the upper regions of the atmosphere, and purify the air. Far from being injurious to the health of men, they often confirm it; and preserve our humours from that putrefaction which continual heat would infallibly produce. If the exhalations and vapours which collect in the atmosphere, were always to fall down in rain, the earth would be too much soaked and softened; the roads would we impassable; our bodies would be filled with humours; their different parts would be too much dilated and relaxed, whereas the cold braces and strengthens them;

and promotes the circulation of the blood. In very hot countries, and in those where the earth is too wet during the winter, obstinate and mortal diseases are more frequent than elsewhere. Travellers assure us, that in *Greenland*, where the country is covered with mountains of ice, and where during the winter the days are but four or five hours long; the atmosphere is very wholesome, pure, and light; and, excepting some slight coughs and affections of the eyes, occasioned partly by the quality of their food, maladies common in Europe, are seldom to be met with among them. It is certain, that the constitution of the human body varies according to the difference of climates; so that the inhabitants of the northern countries have a constitution adapted to the excessive cold which continually prevails there; and their bodies are generally healthy and robust. Even as man, though the love of activity, and labour be necessary for him, is nevertheless glad to suspend his labours every evening, that he may taste the sweets of repose, and spend a part of his time different from that in which he was during the day; even so our nature accommodates itself to the variations of the seasons; and is pleased with this variation, because it contributes to his comfort and wellbeing.

At present, our gardens and fields are covered with snow; and they repose under this covering; and it is necessary to preserve them from the injuries of the cold, to shelter the seed from the impetuosity of the winds, and to prevent it from rotting. Our fields had need of rest; after having produced, during the fine

weather, all those fruits on which we subsist during the winter. In this, let us acknowledge the wise bounty of God: if our present support had not been provided for us: if in this severe season we were obliged to till the earth, our complaints would have some ground: but, he has replenished our stores with a sufficiency for our present necessities; and we enjoy that rest, which is suitable to the season.

How tenderly does Providence care for us in these days of winter! God has endued men with that industry which they require, to defend themselves from the cold and frost. Their inventive minds have led them to find out an artificial fire, by means of which they may enjoy in their chambers some of the comforts of summer. The care of Providence is not less manifest in the yearly produce of wood, and its astonishing increase, than in the fertility of our fields. Besides, we have at this season a multitude of creatures at our command, which make it tolerable. The colder the country is, the more those useful animals are multiplied in it, whose fur is designed to keep us warm. Is it not evident, that the Divine Wisdom has foreseen the wants of different countries; and that he has provided for them by placing animals there, which could live no where else? Our beasts of burden bring us the necessary provision: and it is worthy of remark, that our cattle are most prolific when we stand most in need of them.

Winter does not materially interrupt trade or commerce. Rivers in many places are frozen over; and are as solid as brass; the surface being covered with snow, travelling is facilitated; and thus a new mean

of intercourse is opened among men. Men are not condemned to inaction, or idleness, during this season; for, if they are obliged to suspend the labours of the field, they have a thousand ways of employing themselves usefully in domestic life. The repose of nature invites them to reflect on themselves. Their attention, it is true, can be no longer fixed on the beauties which spring and summer present to their eyes: but their minds may be so much the more at liberty, to reflect even in the darkness of the night, on the instability of all earthly things: and these reflections may lead man to consecrate himself unreservedly to the service of that Supreme Being, who never changes, and to prepare for eternity. Man may now have leisure in a quiet retreat, to cultivate his understanding; study his own heart; correct his errors; and acquire power from his Maker to walk uprightly. How wise should we be, if we made so good a use of this season! If, during the winter, we can neither cultivate our gardens, reap our fields, nor gather in new fruits; we may at least cultivate our souls, and endeavour to render ourselves useful to our neighbour. However severe the season may be, it may nevertheless furnish us with abundant reason to bless God; to acknowledge his benefits, and to trust in him.

How inexcusable must our ingratitude be, if wholly taken up with the inconveniencies of winter, we forget the advantages and blessings which God condescends to give us in this season! Let these considerations awaken our minds to more equitable sentiments, and excite us to celebrate the lovingkindness of the Lord at all times, and in all seasons.

DECEMBER XVI.

THE ELEMENTS.

WHETHER we consider the Universe collectively, or examine its different component parts, we shall always find sufficient motives to lead us to admire the power and wisdom of the Creator. It is true that we know things very imperfectly: and that in most cases we san scarcely go beyond conjecture and probability: but this is enough to cause us to acknowledge the greatness of God on the one hand, and the weakness of our reason on the other. Probably, all the elements are of the same nature, and may be reduced to one only: perhaps they are so combined, as to form but one whole: but, it would be very difficult to consider the elements in this collective point of view: it is therefore necessary to divide them in our minds, and consider the primitive constituent parts of bodies separately.

What various and admirable properties has the *Air* which we every moment respire! With what force does it divide and dissolve all sorts of substances, partaking of the qualities of each! Innumerable vapours and exhalations, and thousands of different odours; so many volatile salts, alkalies, and acids: so many oils and inflammable spirits, which blend and unite with it, render it sometimes noxious: but in general wholesome and good. These foreign matters with which the air is laden, its elasticity, the property it has of being rarefied or condensed, and of reassuming its natural state, produce those agitations in the at-

mosphere, those meteors which disperse noxious vapours which purify the earth, and promote the vegetation of plants. And, though the effects of the air may be sometimes terrible, they are nevertheless absolutely necessary, to prevent the earth from becoming a frightful desert. But, there are in this element, as well as in all the works of the Lord, impenetrable mysteries. Who, for instance, can explain how the particles of air, which are so extremely fine as not to be visible, are notwithstanding, the very means by which objects become visible to us? What can be more astonishing, than that equilibrium between the outward air and that which is within us? A balance on which our very life depends! And who can sufficiently admire this, that one and the same element should be the medium by which sounds, odours, and light should be transmitted!

There is great conformity between *air* and *water;* and its properties and effects are not less various, nor less wonderful. How many different qualities has God given to this element! All the abundance and salubrity of the air, all the fertility of the earth, and all the warmth of the fire, could not save us from perishing, were we destitute of water. How many changes is it susceptible of! Who has given it the property of being dilated, divided and rarefied, so that it can ascend the height of a league in the atmosphere, form itself into fogs and clouds, and continue suspended there? Who has given it power to penetrate plants, to transpire from them through insensible pores; and diffuse itself over our fields and vallies in the form of

a refreshing dew? How astonishing is that property which it has of becoming sometimes lighter than air; (although a mass of water be nearly 900 times heavier than a similar mass of air,) of resuming afterwards its natural weight, of attaching itself to all sorts of bodies; of dissolving the most compact substances, and of uniting itself even with fire!

Of all the elements we know least of is *fire:* it is too subtile for our eyes; but its virtues, properties, and effects are sensible enough. Whether the essence of fire consist in *motion* only, or in the formation of what are called inflammable particles; or, that it is a simple substance, different in its nature from all other corporeal things (which a number of experiments seem to render very probable,) it is nevertheless certain, that its prodigious abundance, its utility, and its wonderful effects, deserve our utmost attention. There is no body, however cold, but contains fiery particles, which become sensible when excited by violent friction. Fire exists every where. Its presence is universal: it is found in the air we breathe, in the water we drink, and in the earth that supports us. It enters into the composition of all bodies: it pervades their smallest pores; it unites itself intimately with them: it moves with them from place to place: and however enveloped, however confined, it fails not to make itself evident at last. With what force does it dilate the surrounding air; whilst the air in its turn nourishes the fire, and renders it more active and violent. Fire gives water its fluidity, the earth its fertility, health to man, and life to all animals.

Earth, when in a pure state, is distinguished from all other substances, by having neither *taste* nor *smell:* by being insoluble both in water and spirits of wine, and in being most friable of all bodies. At first sight it appears very different from all the other elements; nevertheless, it has so many conformities to them, that there are philosophers who believe that water is nothing but earth saturated and dissolved: and that earth is water thickened and condensed. According to these, the water continually diminishes on our globe, and gradually forms compact bodies; because, that formerly our planet was only a wet and fluid mass, and was in more ancient times nothing but water.

All the elements which we have mentioned, are absolutely necessary to our existence and preservation: and there is none of them but may fill us with admiration, when we reflect on its wonderful properties, and on the numerous and diversified effects which it produces. With how many properties, different from each other, has God endued his works! How many agents in heaven and on earth are continually employed for the preservation of the universe in general, and of each creature in particular! How many revolutions and phenomena are produced by the mere combination of the elements! It would be more easy to reckon up the works of God, than the multiplied forces which are still in action. But, how great must that Power be, from which all these proceed! They all depend on the will of the wise and almighty Creator. He has formed the whole; and impressed on each its constant, uniform, and beneficial motion.

It is God who maintains the elements in that equilibrium, to which the world owes its preservation! And to this God, be glory for ever and ever!

DECEMBER XVII.

THE SUN'S INFLUENCE ON THE EARTH.

THE sun is a principal cause of most of the phenomena which take place on the earth. He is the constant source of that light which is so plentifully diffused over our globe. This light of the sun is the most subtle fire; it penetrates all bodies; and when in sufficient quantity, it puts all their parts into motion; attenuates, decomposes, and dissolves those that are solid; rarefies those that are fluid, and thus adapts them to an infinity of motions. It is not evident, that on these various operations of the sun on bodies, all the phenomena, and all the revolutions of the globe, depend even in the smallest circumstances. When the strength of the sun's light increases, i. e. when his rays fall less obliquely on us, and in a greater quantity on a given space, and that they continue longer each day, as is the case in summer; all this must necessarily produce the most considerable changes, not only in the atmosphere, but also on the surface of the earth. And when the rays fall more obliquely on a given space, and are consequently weaker, and in less quantity, and the days being shorter, their action is not prolonged, as in the case in winter; what a change take place in the earth, and

what different phænomena do we observe in the atmosphere! What gradual changes do we perceive, when from the remote sign of Capricorn, the sun continues to approach the Equinoctial Line; till in spring, the days and nights become equal! And, how many new phænomena appear, when this luminous and active globe returns in summer from the Tropic of Cancer towards the Line, till the days and nights become again equal in autumn, and the sun removes from our zenith!

It is on the distance of this luminary, that all the variations depend, which we observe in the vegetation of plants, in the internal constitution of bodies in all climates, and in all seasons. Hence each climate, and each season, has plants and animals peculiar to itself: hence the progress of vegetation is more or less rapid, and the productions of nature subsist a longer or shorter space of time. But, it would be impossible to describe the various effects of the sun on the earth. All the changes and revolutious which take place on our globe, have their principle in the influence of the sun; for on him principally, the different degrees of heat and cold depend: I say principally, for the nature of the soil, the different combinations, which exist in one country more than in another, mountains of a greater or less height, and their different position, may also contribute sómething towards a country's being more or less cold, and more or less subject to rain, to wind, and to the other variations of the atmosphere. But, it is incontestable, that these accessary causes are not sufficient to produce the effects which we observe in different places, and in different

times: for these effects could not exist, if the heat of the sun did not act in the manner it does. And were the degrees and manner of its operation changed, the effects also would change in the same proportion.

It requires but very little attention, to be convinced of the numerous and sensible effects, of which the sun is the prime cause: his influence appears daily. Sometimes he rarefies, and sometimes condenses the air: sometimes he raises vapours and fogs: and sometimes condenses them, in order to form them into meteors, or send them down in rain. It is the sun which causes the sap to ascend in vegetables, which causes the leaves and blossoms to shoot; which produces tinges, and ripens the fruit. The sun animates all nature. It is the source of that vivifying warmth, which gives to organized bodies the power of unfolding themselves, and of growing to perfection. It penetrates into the depths of the earth, where it produces metals, and gives life to animals. It penetrates mountains and rocks, and its influence reaches even to the depths of the sea. This alone, must be sufficient to convince us of the power of our Creator: but if we consider with how much art God has drawn a multitude of great effects out of one and the same instrument, and has caused the heat of the sun to produce so many phenomena in nature, we shall be more and more sensibly persuaded, that nothing less than Infinite Wisdom, joined to unlimited Power, could have produced so many miracles. Would men deserve to be enlightened, warmed, and cheered by the sun, if in the salutary influences of this beneficent globe, they

did not acknowledge the glorious perfections of the Supreme Being; if they did not admire his greatness and goodness; and if they did not adore him with sentiments of the most profound veneration and respect?

DECEMBER XVIII.

TEMPESTUOUS WINTER RAINS.

How different are these cold rains, which fall at present, from the warm showers which in summer embellished and fertilized the earth! This change gives a melancholy aspect to nature. The sun is veiled, and the whole sky appears to be but one immense cloud. We cannot see to any great distance: a gloomy obscurity surrounds us; and the tempest is continually lowering. At last, the clouds empty themselves and deluge the fields: the atmosphere seems an inexhaustible reservoir of water: rivers and brooks are swelled up, overflow their banks, and lay fields and meadows under water.

However, disagreeable and inconvenient this weather may appear to us, we must acknowledge it is for wise, and kind purposes. The earth, in a manner exhausted by its fruitfulness, requires a renovation of its strength; and in order to this, it is not only necessary that it should rest, but that it should be also sufficiently moistened. The rain waters, and revives the dry thirsty land. The wet soaks into it, and reaches down to the lowest roots of plants. The dry leaves which covered the earth, rot, and become excellent manure. The heavy winter rains, fill the rivers anew, and fur-

nish water for springs and fountains. Nature is never idle. It continues to labour, though its activity be sometimes concealed. The clouds, by continually pouring down rain or snow, prepare the fertility of the coming year, and for the riches of summer. And, when the heat of the sun restores the dry season, the abundant springs which the winter rains had formed, diffuse their waters abroad, refresh the fields and vallies, and adorn them with fresh verdure. Thus the wise Creator prepares for the future: and that which appears to us inconvenient, and even destructive, is in his hand the germ of the beauties and abundance, which are lavished on us in spring and summer. The blessings which God grants us by these means, are as innumerable, as the drops which fall from the clouds; and though blind and ungrateful man continue to murmur, when he should rejoice and adore, yet, the eternal and unchangeable wisdom continues to fulfil its beneficent designs. Our preservation is therefore, the chief end which God proposes, in watering the earth with these rains. But, the Divine wisdom knows how to combine various designs subordinate to each other; and from the happy combination of these designs, the order and good of the universe result. Thus, animals which exist, not only for the use of man, but for themselves, must also be fed and supported; for them as well as for us, the rains descend from the clouds and render the earth fruitful.

But here, as in all other things, we see the wisest œconomy. All the vapours and exhalations, which daily arise from terrestrial bodies, are collected and suspended in the atmosphere; which in due time, re-

stores them to the earth, either in the form of small drops, of heavy showers, or in flakes of snow, according to its different necessities; but, this is always done with œconomy, and without suffering liberality to degenerate into prodigality. Every thing becomes serviceable; dews, which are always imperceptible to us, light fogs, and mists, all contribute to fertilize the earth. But, in vain would the vapours arise, in vain would the clouds be formed, if nature had not provided the winds to shake and disperse them on all hands; to convey them from one place to another, to water the ground where it requires it. Were not this the case, some districts would be deluged with perpetual rains; and others would experience all the horrors of drought: trees, plants, grass, and corn must perish, if the winds did not drive away the clouds, and marke out the places on which they were to pour out their rains. *God says to the snow, Be thou upon the earth;* and it descends in flakes: and, when he commands the winter's rain to fall, it spreads itself over the face of the field.

However inconvenient the rains of winter may appear, or the uncomfortable temperature of this season, they are, nevertheless, absolutely indispensable: so also are the dark and gloomy days of our lives. In order that we may bring forth all the fruit of good works; it is not necessary that the sun of prosperity should shine uninterruptedly upon us; we must meet with trials and afflictions. Let us receive adversity from the hand of God with resignation; as we may be fully convinced, that all his dispensations are ordered by infinite wisdom and goodness.

DECEMBER XIX.

JUDICIAL ASTROLOGY.

THE prodigious distance of the heavenly bodies from our globe, and the little connexion they have with it, will not permit us to believe that they can have any sensible influence upon it. Nevertheless, many superstitious people give credit to such influence; and say, that continual emanations proceed from the stars and planets, which operate, not only on the atmosphere, but on all terrestrial bodies. But, what are these emanations? If, by these they mean the proper light of the stars, or the light of the sun reflected from the planets, it comes evidently to very little, as it is much less than what comes to us from the moon alone. But, as the light of the moon has no manner of influence upon the earth, or the atmosphere, consequently the much feebler light of the planets and stars can have none. But, if it be supposed, that other matter emanates from the stars, this supposition is not only void of all foundation; but is evidently false: for, if there were real emanations, they must, when collected in the focus of a burning-glass, produce some alteration, and some sensible change in terrestrial bodies: but, this is contradicted by experience. It therefore follows, that no other matter proceeds from these heavenly bodies, than that faint light which they send to us; or, if any other emanations proceed from them, they must be such as pass through terrestrial bodies, without producing the smallest de-

rangement in their parts. Thus, the astrologers, whether they deceive themselves, or wish to impose upon others, deserve nothing but contempt, when they inform us of the benign influence of *Jupiter*, the malignant influence of *Saturn*, the wit-inspiring influence of *Mercury*, the warlike disposition produced by *Mars;* and the amorous influence of *Venus*.

The planets, not only cannot produce any of those particular effects, which the astrologers attribute to them; but taken even collectively, they have no influence. But, what shall we say of the rain-bringing *Pleiades*, the tempestuous *Orion*, the melancholy *Hyades*, the setting of *Arcturus*, and the rising of *Capricorn;* all of which presage hail and tempests? What influence can the constellation *Taurus* have on pease, beans, and such like; or the star *Sirius* on mad-dogs? What relation can *Scorpio* have with the productions of harvest? But, if the rising and setting of the different constellations were observed only in order to know the proper times for the different operations of agriculture, and not as the causes of natural things, this might be pardoned. In ancient times, the beginning, middle, and end of each season, were not marked by months; but by the rising and setting of stars, in conjunction with the sun; or by immersion in, and emersion from the rays of that luminary Hence the vulgar opinion, that the different aspects of these stars produce the effects which, in reality, can only be attributed to the seasons, and consequently to the sun. *Orion* rises in autumn, and sets in winter: this has made some people think that he is the author

of tempests: but, it is not he who raises them; it is the autumn and winter: and his rising and setting only marks the time of those seasons. When the *Dog-star* rises with our sun, it is excessively hot in our zone; but, this star is not the cause of it; the heat comes from our sun, who is then in his greatest elevation. I say *our sun*, for, in the opposite zone, when the *Dog-star* rises with the sun, it is so very cold as to benumb animals, and cover the rivers with ice. Therefore, the inhabitants of the southern countries, far from considering the *Dog-star* as the cause of heat, consider it as the cause of cold. It is exactly the same with the *Pleiades*, which are supposed to be the cause of rain; and it is the same with all the other constellations, to which effects have been attributed, which, in reality, belong only to the seasons, when these stars rise and set.

If then the *planets* and *fixed stars* have no part in the temperature, and natural revolutions of our globe, they can have no influence over human actions. The happiness and misery of individuals, and of whole nations, depend partly on their natural talents and passions; and partly on the political constitution of those states; and partly on the union of certain circumstances, natural and moral: but, in all these the stars have no influence; and had they any, we should be led to doubt the empire of Providence; and to believe that the world was not governed by an infinitely wise, just, good, and powerful Being. And, who would wish to inhabit a globe, the revolutions of which depended on blind chance, or the influence of the stars, which must be fatal to our natural and moral state.

Let us, therefore, leave to the superstitious, a science inimical to our repose, and so degrading to the human mind: and let us ever understand *astrology* to be only at the bottom, a miserable perversion of *astronomy*. It is a sufficient foundation for our peace, that we live under the empire of a wise, just, and gracious Parent, who is the sole Arbiter of our lot, who directs all the events of our life: and who is the Governor, Preserver, and regulator of the sun, the moon, the planets, and the stars!

DECEMBER XX.

THE POLAR STAR.

Among the northern constellations, there is none so remarkable as that which is nearest to the Pole, and which is termed the *Little Bear*. The last star of its tail is but two degrees distant from the Pole: on this account it is called the *Polar Star*. It is easy to distinguish this from the stars near it, because it scarcely appears to change its position; and is always seen in the same point of the heavens. It appears indeed to revolve round the Pole; but its motion is so slow, and the circle which it describes so small, that it is scarcely perceptible. Its situation, therefore, can be very little varied; and, as it is seen in all seasons of the year, in the same point of the firmament, it becomes a sure guide to the mariner, particularly in the open seas. Before the discovery of the magnet, sailors had no surer guide than the *Polar Star;* and even now, when

the sky is serene, they may depend more confidently on this star, than even on the *magnetic needle.*

The advantages which we derive from the *Polar Star,* may naturally lead us to useful reflections. What a sure moral guide is that inestimable gift of God, viz. his WORD; and especially his GOSPEL, which shews us the course we should steer through the stormy sea of this world; and through the darkness with which we are encompassed. Without this faithful guide, we should wander continually, and never find the path which leads to God and heavenly glory. If this divine word were not as a *lamp* to go before us; and a light which points out the path we should take; we should be liable to err here below; sometimes tormented with fear, at other times entertaining some feeble hope; but always in doubt and uncertainty. It is in divine *Revelation* alone, that we find a *sure* and *invariable rule,* according to which we may pursue the race that is set before us with courage, and finish it with joy. Let us ever follow this sure guide, which cannot lead us astray. Let us attend to it as the pilot attends to the *Pole Star;* and let us keep it continually in sight, that we may not err. With its assistance, we shall shun all dangers; be preserved from shipwreck; and at last arrive in that blessed haven, where we shall rest from our labours; and where we shall enjoy a happiness which nothing can disturb.

What we have said concerning the *Polar Star,* should lead us to admire the goodness of God; who by the situation and course of the stars, gives us a sure knowledge of times, places, and the different points of

the heavens. An astronomer, though in an unknown country, can, by means of the stars tell where he is; and know the month, day, and hour, as exactly as if he consulted the most correct time-piece. If, for instance, we only take notice that the stars come every day *four minutes* sooner to the place where they were the preceding evening; we know consequently, that this will amount to *two hours* in a month. Thus, the star which we noticed this evening in a certain point of the heavens at *ten* o'clock, we shall see if we are on the same spot, the twentieth of January, in the same point of the heavens, precisely at eight o'clock. The star which we observe this day at midnight exactly over our heads, will, in the space of a year, come to the same point again. In this we may see the tender concern of God, for all the inhabitants of the earth: how much to be pitied would many people be, who have neither clocks, watches, nor geographical charts; if they could not supply this defect by the observation of the stars! If we consider ourselves in the place of those people, this meditation will not appear a matter of indifference: for, we must be devoid of every humane and generous sentiment, if objects which do not immediately concern ourselves, but which interest so many of our brethren, should appear unworthy of our attention.

Let us raise our souls in gratitude to our compassionate Father, the Creator of all the heavenly host. The use that the stars are of in this respect to man, is certainly one of the smallest advantages which result from the existence of these celestial bodies: and yet

this benefit alone merits our praise and thanksgiving. "The heavens are the work of thy hand: thou hast marshalled all their hosts. Thou hast extended them widely as a curtain, and made them the ceiling of thy palace. The highest heaven is thy throne, and thou hast hung out the moon and stars to illuminate our nights."

DECEMBER XXI.

EFFECTS OF AIR WHEN CONFINED IN BODIES.

THE effects of air, when enclosed in bodies, are very astonishing. Every body knows what is the consequence of fluids freezing. Water in this state generally breaks the vessels in which it was enclosed. A musket filled with water, if the muzzle be hermetically sealed, bursts with great violence in excessive cold. This, at first view, appears incomprehensible: we know that water is not fluid of itself; but becomes so by means of the principle of heat, which penetrates every part; and that consequently it becomes a solid mass, when it is deprived of the particles of this matter which were included in it; or when its fluidity ceases through excessive cold. It seems then, that the particles of water must be condensed, and approach each other more closely: and that thus frozen bodies should occupy less space than they did before. Yet they certainly expand while in a freezing state; and their size is considerably increased; with-

out which it would be impossible for vessels containing frozen fluids to burst. Besides, how could ice swim, if it did not increase in bulk, and were not consequently lighter than water?

But, what can be the cause of this effect? The *internal air;* for, it is impossible that it could be produced by any *external* cause. It cannot be the *cold:* for this is no real being, nor positive quality; and properly speaking, cannot penetrate bodies: and it is as certain that *heat* is not the cause of this phenomenon. The air cannot insinuate itself into vessels of metal or glass, sealed hermetically; and yet ice forms within them. We must therefore seek the cause in that internal air contained in the water. To be convinced of this, we have only to observe the water as soon as it begins to freeze. Scarcely is the first pellicle of ice formed on it, before the water begins to be agitated, and a number of air bubbles ascend. Often this upper coat of ice rises in the middle and splits, and the water springs up through the cleft, dashes against the sides of the vessel, and in running down freezes. Hence it is, that towards the middle of the surface the water appears elevated and convex. All this is the effect of the internal air; an effect that could not take place, or would at least, appear in a much less degree, if the air were exhausted as much as possible from the water, before it began to freeze.

On this ground, it is easy to explain a number of very singular phenomena. An intense cold is very injurious to vegetables. We know that the sap circulates in all plants; which, though it thickens a little

in autumn and winter, nevertheless continues fluid. Intense cold converts this fluid into ice, and consequently enlarges its mass; and this cannot take place without causing many of the fibres and tubes to burst. Now, when this takes place, it is manifest that when the sap becomes rarefied in spring, it cannot circulate properly; just as the circulation of the blood must be stopped in an animal whose veins are cut. Thus, the growth of the plant is not only injured, but it dies; because the nutritive juice no longer circulates in its vessels. Let us, consider, however, that this very cold which is so prejudicial to the plants, is useful to the earth. A field, tilled before winter, is better fitted to receive the autumnal rains, which penetrate deeply into it. Frost succeeds; the earthly particles become dilated, and separate from each other; and the thaw in spring completes the softening of the earth; rendering it light, moveable, and better adapted to receive the genial influences of the sun in fine weather.

Enough has been said, to convince us of the power of the air; and of that expansive force which is productive of so many advantages to our globe. The property this element has of condensing and rarefying so wonderfully, is the cause of the greatest revolutions in the world. It is but in a very few cases that the power of this fluid can become injurious: and even then the evil that it does, is compensated with vastly superior advantages. But, we must acknowledge, that in this, as well as in a multitude of other phenomena of nature, there are many things which we cannot satisfac-

torily explain. What we know of the nature, properties, and effects of air, depends much on probable conjectures; which may be illustrated and verified in future times. Probably, those who may immediately follow us will discover, that on many points we have formed false and precipitate judgments. How careful should we therefore be, that when we contemplate the works of God in nature, we should do it in a spirit of humility and self-diffidence; always remembering the weakness of the human understanding, and the uncertainty of our opinions and systems. Presumption is inexcusable in every science; but, it is absolutely foolish and ridiculous, when the knowledge of nature is in question.

DECEMBER XXII.

MUSIC.

One of the most pure and innocent pleasures which we can enjoy, we owe to Music. It possesses the power of charming our ears, soothing our passions, affecting our hearts, and influencing our propensities. How often has Music dissipated our gloom, quickened the vital spirits, and ennobled our sentiments! An art so pleasing and useful, well deserves our attention; and calls upon us to employ it to the glory of our beneficent Creator.

But, whence is the impression which Music makes on our ears? It is an effect of the air, which receives an undulatory motion, and which strikes our auditory nerves in variety of ways. When a tight cord is

pinched, its figure is changed: for, its elasticity not only causes it to go back to its first situation, but to extend beyond it; and thus it continues to vibrate back and forward, till at last it settles in that state of rest, from which it was drawn. These vibrations of the string are communicated to the air: which in its turn communicates them to other contiguous bodies. Hence it is, that when an organ is played on, the strings of a lute, if near, will be put in motion, and emit sounds. But, whence is the difference of sounds; and how is it that they are either *sharp* or *flat?* This cannot be attributed to the quickness of the vibrations, by which the sound is popagated in the air, for a *sharp* note cannot communicate itself with more velocity than a *flat* one: nor can it be owing to the quantity of air that is put in motion: for, a sound may be either *flat* or *sharp*, and strong or weak, at the same time. The difference must be from the quickness of the air's tremulous motion. A sonorous body emits a sharp tone, when the vibrations of its parts are very quick: and a flat tone, when these vibrations are slow. But, how is it that certain united sounds are harmonious, and charm the ear; when others are discordant, and put us to pain? All that we can say in reply, respecting the physical characteristic of concords, is, that they are produced in the same key; whereas in discords, though the sounds may be emitted at the same time, yet they do not properly unite and blend together: which occasioning a double stroke on the auditory nerve, affects the mind in an unpleasing manner.

But, of what use would harmony be, if we could

not distinguish it from discord? Let us praise God, who has so disposed the organs of hearing, that we can receive and distinguish different impressions of sound; and has given our souls the faculty of uniting certain ideas to certain corporeal sensations. How much gratitude do we owe to our God, for the many pure and innocent pleasures which he has given us to enjoy! In this point, let us testify our gratitude, by using Music to the glory of his name. Let us lift up our hearts to our Great Benefactor, in the most melodious sounds, and celebrate his Infinite Goodness towards us!

DECEMBER XXIII.

MEN COMPARED WITH OTHER ANIMALS.

In the comparison, which we are going to make between men and other animals, there will be found some things, which are common to both; others, in which they have the advantage over us; and lastly, some in which we have the advantage over them.

The principal resemblance between men and brutes is, that both are material. We have, like them, life, and organized bodies, which are produced by generation, and birth, and supported by food. Both have animal spirits, and strength to fulfil the different functions assigned them. Both have voluntary motion, the free use of their various members, organs of sense, feeling, imagination, and memory. By means of the senses, both can feel pleasure and pain; desire some

things, and be averse from others. Both feel a natural propensity to self-preservation, and the propagation of their species. Both are liable to those general corporeal accidents, which the connection, and different relation of things, the laws of motion, and the structure and organization of their bodies may occasion.

Relative to that pleasure which may result from the gratification of the senses, animals have many advantages over men. A principal one is, that they do not need so much clothing, instruments of defence, and conveniencies as men: and are not obliged to invent, to learn, and exercise the arts, necessary to procure them.

At their birth, they bring into the world clothes, arms, and other necessary things: or, if any thing should be wanting, they have only to follow their natural instinct, which is sufficient to render them happy. That instinct never misleads them; and whenever their appetites are gratified, they are perfectly content; they desire nothing farther, and never run into excess. They are satisfied with the present, and take no trouble concerning the future: for, there is much reason to believe, that animals have not the faculty of representing to themselves what may happen. A present sensation informs them of their wants; and their instinct teaches them how to supply them. These means they use with pleasure: they procure them what they wish; and they enjoy what they get with satisfaction. They never think of the morrow: they know nothing of inquietude, concerning the future; even death itself surprises them, without having been foreseen; and with-

out having been the cause of previous affliction to them.

In all these respects, the brute has the advantage over the man. Man is obliged to meditate, invent, labour, exercise himself, and receive instructions, without which he must remain in a continual state of childhood; and could scarcely procure himself the necessaries of life. His instincts and passions are not sure guides: on the contrary, if he abandon himself to their direction, he is sure to be miserable. Reason alone, makes the essential difference between him and the brute, supplies what is wanting; and in other respects gives him prerogatives to which the brute creation can never attain. By means of this faculty, he not only acquires necessaries, conveniencies, and superfluities: but, he can multiply the pleasures of sense, can ennoble, and render them still the more gratifying, as he knows how to govern his desires by this faculty. His soul tastes pleasures, which are entirely unknown to brutes: pleasures, which spring from science, wisdom, order, religion, and virtue: and these pleasures infinitely surpass all those, which come through the organs of sense: for, 1st, far from being contrary to the true perfection of man, they continually increase it. 2dly. They never forsake him; even when his senses are deadened by sickness, old age, or any other circumstance; and are become insensible to all animal gratifications. 3dly. They cause him more and more to resemble God; while, on the contrary, the more he gives himself up to the pleasures of sense, the more he is degraded, and the more he resembles the brute. We may add, that

the brutes are confined within a narrow sphere; that their desires and propensities are but few, and consequently their pleasures are not greatly diversified; whereas, man has an infinity of desires: can press every thing into his service; and knows how to make every article useful in one way or other. He can continually add to the perfection of his nature, by new discoveries: he acquires farther degrees of knowledge; and can make unlimited progress in the path of perfection and happiness. But, the beasts are constantly confined within a narrow compass; neither invent nor perfect any thing; continue always at the same point; and never rise by application and exercise above animals of the same species.

We may conclude, that it is reason alone, and its consequences, which give us the superiority over the brute creation; and in this the chief excellence of human nature consists. To use our reason to ennoble the pleasures of sense; to relish intellectual delights; to grow continually in wisdom and holiness; these distinguish man from the brutes: this is the point, to which he should ever direct his attention: this is the end for which his Maker formed him. Let it be our grand business, our constant study, to answer this end; for happy we cannot be, but in proportion as we seek what reason and revelation proclaim to be useful and good.

DECEMBER XXIV.

A CALCULATION CONCERNING THE RESURRECTION.

WITH what a croud of human creatures, must a single city be filled, on the great day of resurrection! What prodigious multitudes will be spread over the whole earth! Prodigious indeed, but not innumerable; seeing each of the dead is known unto the Lord his Judge, and the name of each, entered in the eternal register. None shall be lost; for all must appear before the judgment-seat, and none can escape the notice of the all-seeing God.

Let us suppose, that *Germany* began to be peopled about 500 years after the general deluge; that is, about 3,650 years ago, and that from the foundation of the city of *Hamburgh* at the above time, to the general judgment, suppose it were to take place in the present year, there have only 200 persons been buried annually, taking one year with another; the number of persons would amount to 730,000! If then a single city could produce so many at the day of judgment how many must the whole German Empire produce! Admitting that Germany contains twenty-four millions of people, the city of *Hamburgh* could be reckoned only the three thousandth part of the whole. If this be the case, we may suppose on the preceding calculation that Germany will then produce 2,190 millions! This is a prodigious number undoubtedly; and yet what is it in comparison of the produce of the

whole earth, the present number of whole inhabitants is estimated not less than 1,000 millions!—If we fix on this number, and apply the same calculation as before, the total of those who have died since the above-mentioned time, must amount to 912,500 millions! If we now add those who have lived before the general deluge, and those who have died during the 500 years next following, which we may estimate at one fourth of the preceding, we shall then have a sum total of 1,740,625 millions! Lastly, add all those who shall be found alive at the day of judgment, and let us fix the number at no more than 1,000 millions, and the whole amount will be 1,141,625 millions!

Let us give full scope to our imaginations, and figure to ourselves as far as possible, that this prodigious multitude shall appear in the last day, before the Judge of the Universe: how great must that intelligence be, that can scrutinize the most secret thoughts of all the individuals of which this vast multitude is composed; who knows exactly all their words, thoughts and actions; who perfectly remembers the day of their birth, the duration of their life upon earth, with the time, manner, and circumstances of their death: who shall be able perfectly to distinguish the scattered atoms of each; separate, collect them, whether their bodies had been reduced to ashes, dissolved into millions of particles, or had undergone innumerable transmutations! What a work of Omnipotence to collect these scattered atoms, to purify, ennoble them, and form them into immortal bodies!

God has informed us, by Divine revelation, that hosts

of angels shall gather his chosen from the four winds: that the first sound of the trumpet shall awake the bodies of saints that slept; for, those who died in Christ, shall rise first. (1 *Cor.* xv. 23.) What a pleasing employment to the ten thousand times ten thousand thousand angels, (*Psal.* lxviii. 17.) to collect their well-beloved brethren, and present them to Christ! And what transporting joy must it be for the myriads of blessed spirits, whom God had gathered into his bosom, to find again those bodies, which they had left behind pale, ghastly, disfigured by sufferings, mutilated by acts of violence, or consumed by fire; to find them again, I say, clothed with celestial beauty and splendor like those of the holy angels; as light, as strong, and as radiant! Such bodies shall never more be as they were formerly, hindrances to the spirit: but shall be in every respect, adapted to the employments of a state of eternal beatitude. With what transport may we figure to ourselves, the surprize and ineffable sensations of the elect, at the sight of this miraculous change!

DECEMBER XXV.

REFLECTIONS ON THE NATIVITY OF CHRIST.

WHAT sentiments of joy, gratitude, and love, should the Christian feel, who, on this day, celebrates the nativity of Christ? But how great should our surprise be, when we reflect on the circumstances which accompanied this great event! We see a Son of Man in the lower state of humiliation; and this Son of Man is

our God! We behold the strong God, the Invisible, by whose word the heavens and the earth were made, and by whose word they shall be destroyed; and we see at the same time, a visible being, weak, and clothed in flesh like our own! How wonderful is this union! The King of kings, whom the angels adore, appears in the form of a servant! He is an infant, weak, destitute, shedding tears, and lying in a manger! What an astonishing humiliation! Human nature so limited and corrupt, raised by Jesus Christ to an eternal throne of glory! What an astonishing change! But, can we at all comprehend the greatness of the Divine mercy? Or rather, should not the astonishment and admiration with which we are inspired when viewing it, be redoubled while reflecting on our unworthiness, and the infinite Majesty of him who came to our relief? This is a manifestation of love, which infinitely surpasses all that we can merit: a love, which exceeds all that we could either hope for, or conceive: a love, at the contemplation of which we can only admire, adore, and be silent.

But, if our admiration be great, should not our hope be equally so? In the Saviour incarnated, we see the glorious sign of the new covenant which God has made with man. In this we see how faithful God is to his promises, seeing he has given his Son, for the life of the world. And, should we not expect, that whatever God has promised in his name, shall be accomplished with the same fidelity? Jesus Christ would never have honoured our nature so far, as to have united it so intimately to himself, had he not designed to

pardon our iniquities, heal our infirmities, wash out our stains, and restore the nature of man to its original purity and innocence. What confidence should we therefore have in the love of our heavenly Father! He has already given us proofs of an inconceivable love: and will he not with Christ freely give us all things! What can he refuse to grant to our earnest prayers, who has already given us his most precious gifts, without our having even requested them? And, may we not have the greatest confidence in him, who became man for our sakes? If God be in Christ, he will certainly accomplish all that he designed, by coming into the world. He will put all our enemies under his feet; he will blot out all our iniquities, and his almighty hand will open the gates of heaven for our reception. If we consecrate our souls to him, he will snatch us from that abyss of vice, in which we have been immersed; and give us power to overcome the world and sin: we shall be made new creatures, holy, and glorious like himself.

Can any thing be more just and rational, than our giving up ourselves on this solemn day, to sentiments of gratitude and joy. Can love be repaid, but by love? It is true, that the love of God our Saviour towards us is inestimable, and that our's must ever be infinitely less than his: but, let us exert all the powers he has given, and love him with all that fervor with which his grace is ready to inspire us. This sincere love, though weak, will be pleasing in his sight. The love of Christ will induce us to seek in him, our happiness and joy; and the contemplation of his mercy will be

our most delightful employ. We shall seek nothing with so much fervor as to keep up a holy communion with him by faith. Full of zeal for his glory, we shall avoid and abhor every thing which might defile our souls, or render them displeasing to the Divine Redeemer. Let us dedicate our lives to him, and only expect a continuance of his favour, while walking according to his holy precepts. Yes, blessed Redeemer, to thee alone should we consecrate our bodies and souls: to thee we should sacrifice every wish! At thy manger we should learn to renounce ourselves; to abhor pride, and to suffer (if necessary for our neighbour's good) inconvenience, humiliation, and distress.

Such are the sentiments, with which those who are called Christians, ought to celebrate the nativity of Christ. Every joyous emotion should have its origin in the deepest conviction of the great truths of our religion. Let not our admiration be the fruit of ignorance, but of an enlightened conviction. To this end, let us deeply and seriously reflect on the wonders of divine grace; if not to fathom their depths, yet, to get a deeper knowledge of their nature and certainty. And, if the greatness of the wisdom of God, and his immense love astonish and confound us, let them also excite in our hearts, a profound veneration for him who dwells in the heavens, and a humble opinion of our own weakness. Let us take heed, that our hope be not the effect of a blind persuasion. If it be the offspring of unfeigned faith, what sweet consolation, what celestial joy will it diffuse through our hearts! Then, assisted by faith's victorious power, we shall

surmount all the difficulties of life; nothing shall be able to rob us of our joy; nothing be able to destroy our felicity. Lastly, let not our love for Christ, be ever separated from the most lively gratitude: let us endeavour, incessantly endeavour, to offer the sacrifice of a pure heart, and holy life to him, who has done so much for us. "What can we render thee, O our great Benefactor, for so much love! Thou hast united us to God; thou hast purchased salvation and life! Lord, accept the homage of all we have, and all we are! Receive the sacrifice of our bodies and spirits, which both belong to thee!

DECEMBER XXVI.

THE PLACE OF CHRIST'S NATIVITY.

At first sight, it seems of little consequence to know the *place* of Christ's nativity; for we should consider him as our Redeemer, whatever the circumstances might be which attended his mortal life. But, seeing it has pleased God to announce beforehand, the place where the Saviour of the world should be born; it became necessary that it should happen precisely in that place; and that this should be one of the characteristics, whereby Jesus Christ should be known to be the true Messiah.

It is also a matter of small importance to us, where we may live; provided we find genuine happiness. There is no place on earth, however poor and despicable, but may have better, and more happy inhabitants,

than many of those are who dwell in the largest and most celebrated cities. Do we know a single place on the whole globe, where the works of God do not appear under a thousand different forms: and where a person may not feel that blessed satisfaction, which arises from a holy and Christian life? For an individual, that place is preferable to all others, where he can *get*, and *do* most good. For a number of people, that place is best, where they can find the greatest number of wise and pious men. Every nation declines, in proportion as virtue and religion lose their influence on the minds of the inhabitants. The place where a young man first beheld the dawn, and the beauty of renewed nature, and with most lively sensations of joy and gratitude, adored his God with all the veneration and love his heart was capable of; the place where a virtuous couple first met and got acquainted; or where two friends gave each other the noblest proofs of their most tender affection; the village, where one may have himself given or seen the most remarkable example of goodness, uprightness, or patience; such places I say, must be dear to their hearts.

Bethlehem, according to this rule, was, notwithstanding its smallness, a most venerable place; seeing there, so many pious people had their abode; and that acts of peculiar piety had often been performed in it. First, the patriarch *Jacob* stopped sometime in it, to erect a monument to his well-beloved *Rachel*. It was at Bethlehem that honest *Naomi*, and her modest daughter-in-law *Ruth*, gave such proofs of their faith and holiness: and in it *Boaz*, the generous benefac-

tor, had his abode and his possessions. At Bethlehem the humble *Jesse* sojourned, the happy father of so many sons; the youngest of whom, rose from the pastoral life to the throne of Israel. It was in this country that *David* formed the resolution of building a house for the Lord; and in which he shewed himself the true shepherd and father of his subjects, when at the sight of the destroying Angel, whose sword spread consternation and death on all hands, he made intercession for his people. It was in Bethlehem that *Zerubabel* the prince was born, this descendant of *David* who was the type of that Ruler and Shepherd, under whose empire, *Israel* is one day to assemble, in order to enjoy uninterrupted happiness. Lastly, in this city the *Son of God* appeared; who by his birth, laid the foundation of that salvation, which, as Redeemer, he was to purchase by his death for the whole world. Thus, in places which from their smallness, are entitled to little notice, men sometimes spring, who become the benefactors of the human race. Often, an inconsiderable village has given birth to a man, who by his wisdom, uprightness, or heroism, has been a blessing to whole kingdoms.

It is our business so to live in our cities or villages, that the end for which Jesus Christ was born, may be accomplished in us. It is certain, that genuine piety would make the most rapid progress in the earth, if every where, men endeavoured to give proofs of innocent manners, and fervent faith; and become models of patience, diligence, and uprightness. If our cities furnished a greater number of virtuous examples,

their influence would soon become extended to the inhabitants of the country: and in the smallest villages or hamlets, we should see persons, who, like Joseph and Mary, were distinguished by their piety; and would attract the respect of the wise and good; though living in the depth of poverty and abasement. God would shed his blessings over the country of these good people; and in some generations might we not hope to see a people formed, full of the fear of the Lord, and diligently walking in his ways?

He who has travelled most over the world, who has visited cities, the dwelling places of kings; and who has been a witness of the various crimes committed there; has he not cause to be thankful to God, if at last he find a town or village, where, in a peaceful cot, encompassed with quiet neighbours, he may consecrate himself entirely to the service of God and the good of man, and thus arrive at that genuine happiness which flows from peace and serenity of soul. He will not then regret that he lives not in places, more magnificent indeed, but where sensual pleasure spreads all its snares: more superb, but where vice has its throne: more rich, but where the inhabitants live in forgetfulness of God, and the duties they ought to perform. To these he will prefer an obscure retreat; where, sheltered from cutting remorse, he may spend his days in tranquillity and joy.

DECEMBER XXVII.

THE CARE WHICH GOD TAKES OF MEN FROM THEIR BIRTH.

WHAT a multitude of wants have we the moment we are born! It is with great agony, and through the assistance of others that we are brought into the world; and we should have speedily lost the life we began to live, had not a variety of things, relative to our clothing and nourishment been provided beforehand; and had we not found persons, who condescended to take care of us in that state of weakness, in which we were totally destitute of all things: or rather, if our heavenly Father had not watched over our preservation. He took care of us, when we were in our mother's womb; where no human wisdom or diligence could have provided for us. His hands formed, arranged, and connected all the members of our bodies. He pointed out to the veins the course they should run; and filled them with the vital fluid. *He has clothed us with skin and flesh, and fenced us with bones and sinews.* Job x. 2. We were a shapeless mass; but the Almighty fashioned us: and uniting a rational and intelligent spirit with our bodies, he made a human creature worthy of himself; for he stamped it with his own image. The same kind Providence which presided over our formation, has never forgotten us; but continued to watch over us with paternal care. At our entrance into the world, we were provided with tender and faithful friends, who received us with extraordinary affection, and who spared neither trouble

nor expence to do us good. These faithful friends were our parents. What miserable creatures must we have been, had not our heavenly Father inspired them with such disinterested love for us! But, could even this love have availed, had these parents been destitute of the means to assist us! The more they loved us, the more insupportable their indigence would have been; and the more miserable they must have felt, while destitute of the power to supply our wants. But, God took care that they should have every thing that was necessary for us, precisely at the time in which it was needed.

But the tender care of the Lord extended far beyond the moment of our birth. He then laid the foundation of our future happiness. Poor and despicable creature, we neither knew, nor could know at that time, what our lot should be. But, all was perfectly known to him. He saw the whole of our life, with the future and contingent events which concerned it; together with all their consequences and references. He knew what would be most advantageous to us, regulated our lot accordingly, and determined at the same time on the means which he purposed to employ, in order to procure us that felicity which his mercy designed. From our birth the causes existed, which were to influence our future happiness; and began then to act, conformably to the Divine views. How much did the happiness of our lives depend on our parents: their manner of thinking, their circumstances in life, their connections, &c.? How much did the education we received, the examples we had before us, the connections we formed, the opportunities we

had of exercising our powers and unfolding our talents, influence the happiness of our whole life!

And did not the wisdom and goodness of God our Father appoint, regulate and conduct every advantageous circumstance? We could not choose our own parents, nor appoint their situation in life. The choice of the masters and friends we had in our youth, did not depend wholly on our parents; and whatever their prudence and attention might have been, they themselves were dependent on circumstances and opportunities. It was God who managed all those conjunctures; which have proved so advantageous to us. It was he who watched over our happiness; and who in his great goodness directed and controuled all events, which might prove favourable or unfavourable to our wellbeing. He foresaw and determined every thing; and all his dispensations towards us were acts of wisdom and mercy. He knew what adversities would be useful to us; and appointed what their sources should be; when they should begin, when they should end, and the advantages we should derive from them. All these causes acted for some time in secret: by degrees they were developed; and in many instances we have already seen how necessary our losses and afflictions were to our welfare. But they could not have had these salutary effects, without the concurrence of many causes, which acted remotely a loug time before, and were utterly unknown to us. In a word, the Divine Goodness has wisely directed all the events of our life, so, as to be most beneficial to us.

These reflections should fill our souls with confi-

dence and tranquillity. What can be more consolatory, than to be persuaded that an invisible Being takes care of us: a Being who is infinitely good, wise, and powerful: who has watched over us from the moment of our birth: and who from that hour determined and regulated every thing necessary for us, during the course of our lives; who has counted our days, and fixed the term of our life so, that no human power can change it: and who, from the first moment of our existence, has provided every thing necessary for our present and eternal happiness? The confidence and peace which rest on this basis, must be immoveable.

DECEMBER XXVIII.

THE TERM OF HUMAN LIFE.

EVERY man dies precisely at the time that God has appointed in his eternal wisdom. As the time of our birth is fixed, so also is the time of our death. But, the term of our life is not subject to fatality: nor inevitable necessity: such things have no existence. All that occurs, may happen sooner or later, or not take place at all. And it is always possible, that the man who died to-day, might have died sooner, or might have lived a much longer time. God has not fixed man's days by an arbitrary or absolute decree, without taking in the circumstances in which he might be found. He is an infinitely Wise being, who never acts but from motives worthy of himself. He therefore must have just reasons to induce him to determine, that such a man should leave the world at such a time

rather than at another. But, although the term of life be in itself neither influenced by necessity, nor fatality, it is nevertheless certain, and can never be really changed.

When man dies, there are always some causes which infallibly lead to his death:—but these may be always suspended, or changed, by the Supreme Being. One dies of a mortal disease: another by a sudden and unforeseen accident. One perishes by fire; another by water. God has foreseen all these causes; nor is he an idle and indifferent spectator in the business: he has examined them all with care; he has compared them with his own purposes; and sees whether he can approve them or not. If approved, they are consequently determined; and, in that case, there exists a divine decree, in virtue of which the man dies of such and such an accident, and in such a particular time. This decree can neither be revoked nor prevented: for, the same reasons which God has at present for removing a man from this world, were known to him from all eternity: and he formed the same judgment then of it which he has now. What, therefore, should induce him to alter his purpose?

But, it may so happen, that God foreseeing the causes of the death of a particular person, did not approve of them. In this case, he must, at least, have determined to permit them, without which they could not take place, nor could the man die. But, if the permission of those causes of death were resolved on, God wills, therefore, that we should die in the time in which those causes shall exist. It is possible, that he might have been inclined to grant us longer life;

and did not approve the cause of our death: but it was not consistent with his wisdom to counteract the operation of those causes. He views the Universe collectively, and finds reasons to induce him to permit the death of a certain person at a particular time; although he approve not the causes, manner, and circumstances of that death. His wisdom finds means to direct that death to the most useful purposes; or, he foresaw, that a longer life in that person's circumstances, would neither be useful to himself, nor to the world: or, lastly, he saw, that in order to prevent that death, there must be a new and different combination of things: a combination, which could not accord with the general plan of the Universe, and which would have prevented a greater good from taking place. In a word, although God may sometimes disapprove the causes of a man's death, he has, nevertheless, wise and just reasons to permit them to take place; and consequently to purpose, that the man shall die at that time, and by those means.

These considerations are calculated to make us look on death with Christian fortitude. What renders death formidable is, chiefly, the uncertainty of the manne and time of our leaving the world. If we knew before hand, when, and what manner of death we should die, we should probably wait for it with more courage, and fear it less in its approaches. Now, nothing can be more efficacious to calm and strengthen our mind than the persuasion, that Divine Providence watches over our lives: and that from the foundation of the world he has determined with Infinite wisdom and good-

ness, the time, manner, and circumstances of our death. The term of our lives is therefore appointed; and no man can die sooner or later than God has determined; for the good even of the person himself: for each person dies precisely at the time in which it it most to his own advantage. An Almighty Providence watches over our days; it lengthens or shortens them as it judges will be most profitable to the children of God; not only in reference to this world, but also in reference to eternity. Fully persuaded of this consolatory truth, we may wait for death with a trans quil mind; and seeing the hour is uncertain, let us be found constantly ready to meet it. It certainly will not appear, till God judges it most expedient. It is true, we know not what kind of death we shall die, nor the circumstances of it; but, it is sufficient to know, that we cannot die but in that way in which the beneficent Governor of the world sees it will be best for ourselves, and for all those who appertain to us. Fortified by this thought, let us proceed without anxiety, on our earthly pilgrimage; let us cheerfully submit to all the dispensations of Providence, and never fear any danger, to which the performance of our duty may expose us.

DECEMBER XXIX.

THE INSTABILITY OF EARTHLY THINGS.

THERE is nothing in Nature, whose state and mode of being is not liable to change. Every thing is the

sport of frailty and inconstancy: and nothing is so durable as to continue always like itself. The most solid bodies are not so impenetrable, nor their parts so closely connected, as to be exempt from dissolution and destruction. Every particle of matter changes its form insensibly. How many changes have our bodies undergone since they were formed in our mother's womb! We annually lose something of what we formerly were; and gain as many new particles from the animal, vegetable, or mineral kingdom. Every thing on earth increases and decreases by turns; but with this difference, that these changes do not operate so speedily in some bodies as in others.

The celestial bodies appear now the same that they were from the beginning; and these are probably the most invariable of all bodies. Nevertheless, accurate observers have noticed, that certain stars have disappeared, and the variableness of the spots on the sun's face prove, that even that luminary is in some respects subject to the general law of mutability. Besides, his motion renders him subject to several variations; and although he is never extinct, yet he has been often obscured by fogs, clouds, and perhaps by internal revolutions also. This is all that we can know, in the almost immeasurable distance we are from him. How many other changes, both external and internal, might present themselves to our eyes, were we near enough to that luminary, we cannot tell. If the instability of terrestrial things strike us more, this is because we are so nigh them. And how frail are they! And how subject to change! The object continues to resemble itself; and nevertheless, it is different from what it

once was. We daily see the things here below under new forms; some increase, others diminish and perish.

The year, which will come to its close in about two days, has furnished us with incontestable proofs of this. Even in the little circle in which we are confined, how many revolutions have taken place! Many of those whom we have known for many years, are no more. Many, whom we have known to be rich, are now become poor: or, at least, reduced to straitened circumstances. And, if we examine *ourselves*, shall we not find, that in many respects, *we* also have been changed. Have not our health and activity suffered considerable decrease? And do not all these alterations indicate, that the great and last revolution which death shall work in us is at hand? Besides, how many things may happen in this and the two following days of this year! We may become poorer than we are: be attacked by sickness; experience the unfaithfulness of reputed friends; or even die in this short space of time: at least it is certain, that circumstances may occur, which it was absolutely impossible for us to foresee.

Reflections of this nature might well distress us, or even drive us to despair, if we could not derive support and consolation from religion. But, this leads us to the only, invariable, and eternal Being, whose very nature is unchangeable. This immutable Being must be to eternity just what he is. Therefore his mercy endures for ever; and his righteousness from generation to generation. May this truth be ever present with us, that it may soften the disagreeable vicissitudes which we continually meet with here below!

How happy will it be for us, if all these revolutions, which days, years and times bring with them, lead us nearer to the Supreme-Good; and to the state of everlasting glory and felicity! "Thus, full of confidence in his invariable goodness, we will submit with resignation to all the changes and chances of this mortal life; all our souls shall rejoice in him, who is the immutable Being, our Light, our Rock, and our sure Defence."

DECEMBER XXX.

HOW TIME IS GENERALLY EMPLOYED.

THE approaching close of the year, should lead us to make some reflections, which, however important, do not always occupy us as they ought. In order to feel more sensibly how short the course of our life is, let us now examine how we have spent the days that are past; though we have much reason to believe, this will be to us, a subject of humiliation and confusion.

Let us first consider those days, to regulate the use of which, was utterly out of our power. How many hours of this year have we employed in eating, drinking, and sleeping; in a word, in caring for the body, and providing for its various necessities! How many hours more have been spent in almost useless occupations, or at least such as were of no use to our immortal souls! For instance, in unnecessary journies, in disagreeable company, and in long and fatiguing meals? How many hours have we spent in uncertainty, and consequently in inaction? How much time have we lost in examining intricate questions, and embarrassed affairs, in weighing the *pros* and *cons*, before we re-

solved to act in certain important matters? And how many hours have we lost in the expectation of particular advantages? Thus, in taking but even a superficial view of the use we have made of this year, we find that a multitude of days have been lost to that immortal spirit, which inhabits this clay tenement: and after this deduction, how little remains of the year which we can say has been employed for real life! It is evident that out of 365 days, there are scarcely 50, of which we can say, "These are ours: we have employed them in the great interests of our souls, and in the acquisition of eternal felicity." And, of this small remaining number of days, how many hours have we lost by our folly or frailty! Alas! How much time has been sacrificed to vice, or tainted by sin! God of mercy! How humiliating is this thought! How proper to confound us! On this subject, nothing but the ever salutary doctrine of the merit of thy Son, can calm our terror, or snatch us from eternal misery!

How many of those hours, which the paternal love of God gave us to be employed in our eternal interests, have been foolishly lavished away, and that with the blackest ingratitude! Precious hours! during which, alas, we have wandered far from this most compassionate and best of Parents! Can we not reckon many hours, which we have sacrificed to the world, to vanity, to indolence, to false pleasures; which we have profaned by impurity, envy, jealousy, backbiting, and other vices, which betray a heart destitute of proper love and respect to God; and of charity to our neighbour? And, have we never spent any of that time, which we should have employed in advancing the

kingdom of Christ, in opposition to the Divine counsels, in disturbing the peace of society, and distracting his church?—And, even since God has brought us to a better mind, and inspired us with a desire to walk in his ways; how many days have we irrecoverably lost, which should have been employed in that religion, which was our glory, and which pointed out the path that led to eternal happiness! How have we been injured by distractions, coldness, barrenness of soul, doubts, inquietudes, want of temper, and impurity of mind! These, and many other infirmities, the consequences of improper conduct, the frailty of the body, the weakness of the mind, or the strength of old habits, have often disgraced those, who have made some considerable progress in the ways of God. Now, by all these things, our piety is injured, the progress of our happiness retarded, and our graces rather weakened, or destroyed! Lastly, with what speed does the little portion of time, which we can dispose of, fly away! A year is gone, and we have scarcely perceived it! And, of what importance is a *year* to a being, whose real life, may be reckoned by *hours?* We have scarcely thought seriously of it, till another year is slipt by. Had we employed this year in the work of our salvation, we should not desire to recal it either in whole, or in part. But, now that we find so little of it has been spent in the great purposes, for which it was given, we wish to recal that part at least, of which we have made the worst use. But, it is in vain: the year closes—and all the good and bad actions which have marked it, are swallowed up in eternity!

Father of Mercies! Reconcile us to thyself, by Christ

Jesus: and grant, that this mispent year may not become a subject of anguish to us on our death-bed, nor the cause of our perdition through eternity! Pardon, O pardon all sins, which we have this year unhappily committed against thee! And grant us *Mercy!*—*Mercy*, at the hour of death; *Mercy*, in the day of judgment; and *Mercy* through all eternity!

DECEMBER XXXI.

A HYMN OF THANKSGIVING AT THE CLOSE OF THE YEAR.

LORD! Thou art the God of *Time:* thou art also God of *Eternity!* I will sing a joyous hymn to thy praise: I will celebrate thy holy name. A year is finishing its course.—To what do I owe the continuation of my existence?—It is to thy grace alone, and to thy paternal bounty!

Being of beings! receive my adoration! Everlasting Lord, thou canst not vary; but, as for us poor and feeble mortals, we have been, are now, and shall be *Dust*. Thou alone art incapable of change. Thou hast been, thou art, and thou shalt be to eternity!

Lord, thy faithfulness endures from generation to generation: thy mercy is new every morning:—there is not a moment of my life, in which thou hast not given me some new blessing.

Thou hast led me by thy Fatherly care, through the year, which is now ending:—when my heart became a prey to anxiety and distress, thou didst pour out thy

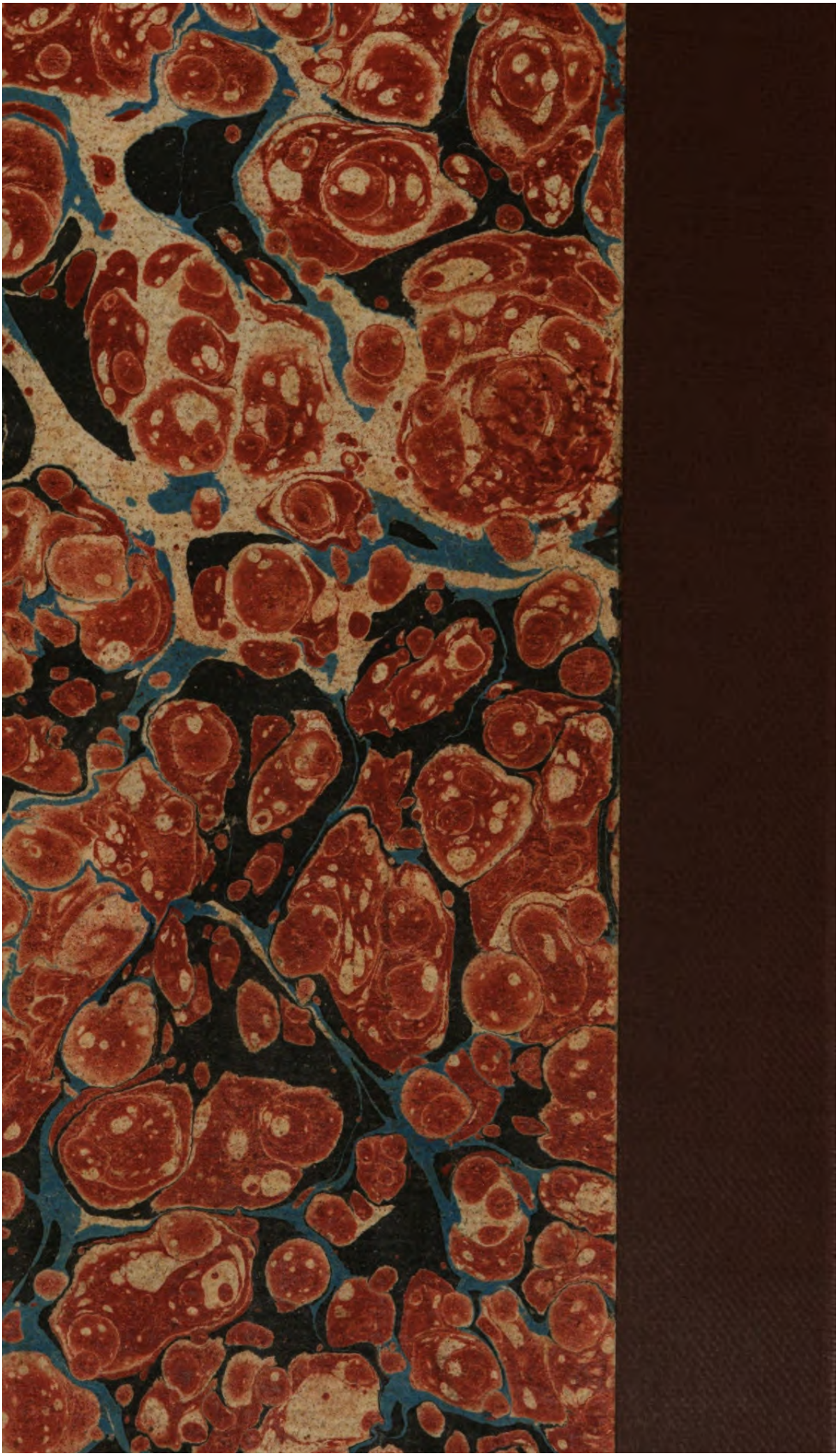
consolations, and didst haste to my succour. I will praise thee! I will exalt thee, from the ground of my heart; I will cast myself anew on thy unerring guidance, and merciful support.

Pardon, O my God! Pardon the innumerable offences, which I have committed against thee in the days that are past! And, let me once more, for the sake of Jesus, experience thy paternal support! Teach me to do thy will: teach me to please thee as long as I live!

Inspire me with new zeal, and grant me new strength to walk before thee in the paths of righteousness! Make me attentive to thy voice in my conscience! Quicken and sanctify my heart by thy Spirit; that, being filled with love, and detached from the world, it may ever be united unto thee, O thou Sovereign Good!

The world, and its enjoyments flee away: in it therefore, I should seek no happiness.—Even here below, I may aspire after pure joys.—I am related to angels:—my patrimony is heaven:—grant, O God, that I may incessantly aspire after it!

O my God! Teach me to redeem the time, and to walk with holy circumspection in the way which leads to eternity! Condescend to alleviate the burthen of life, till I reach that happy period, in which I shall rest from my labours and my repose be interrupted no more! Amen.

FINIS.

R. Edwards, Printer,
Crane-Court, Fleet Street, London