

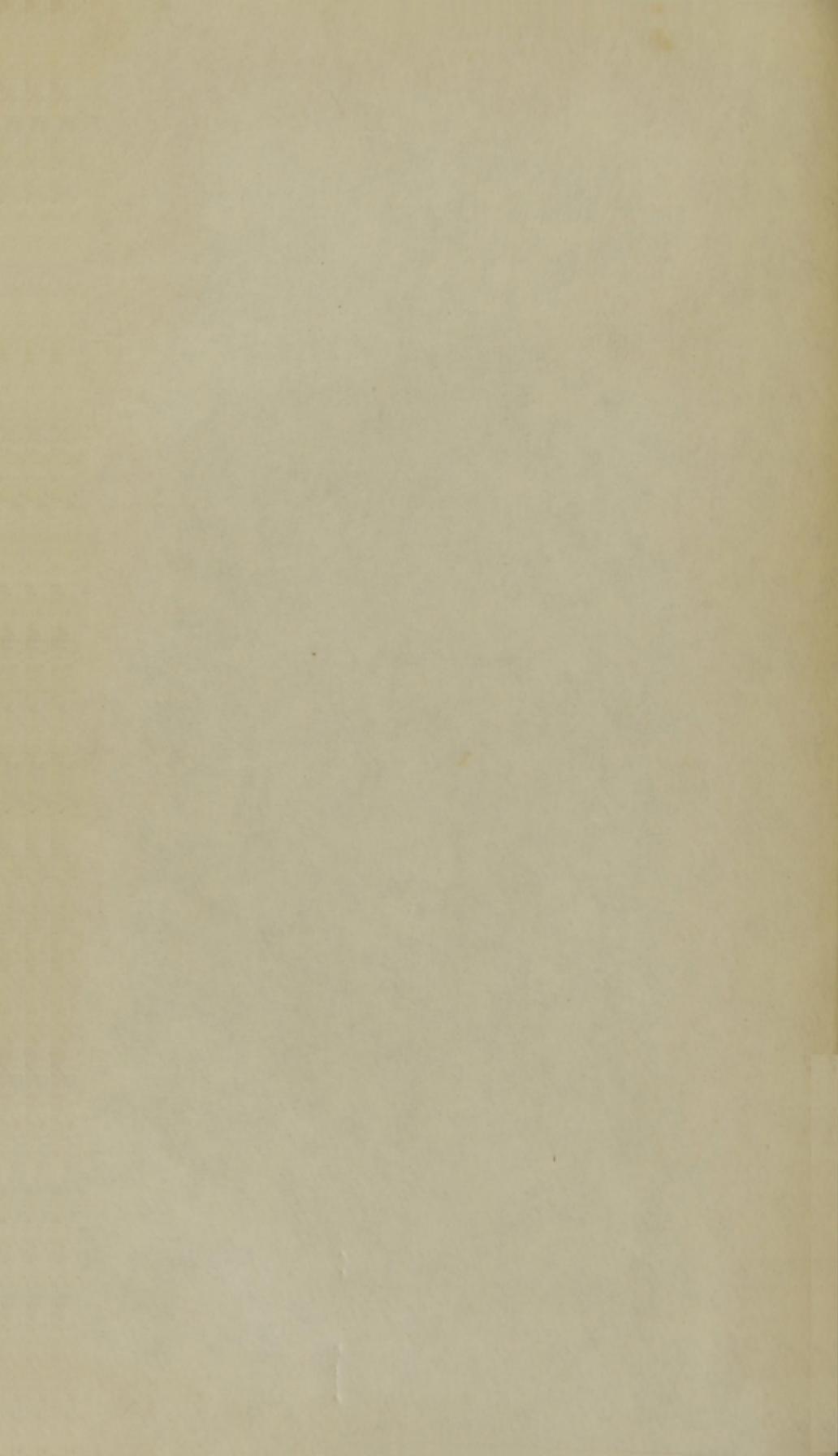
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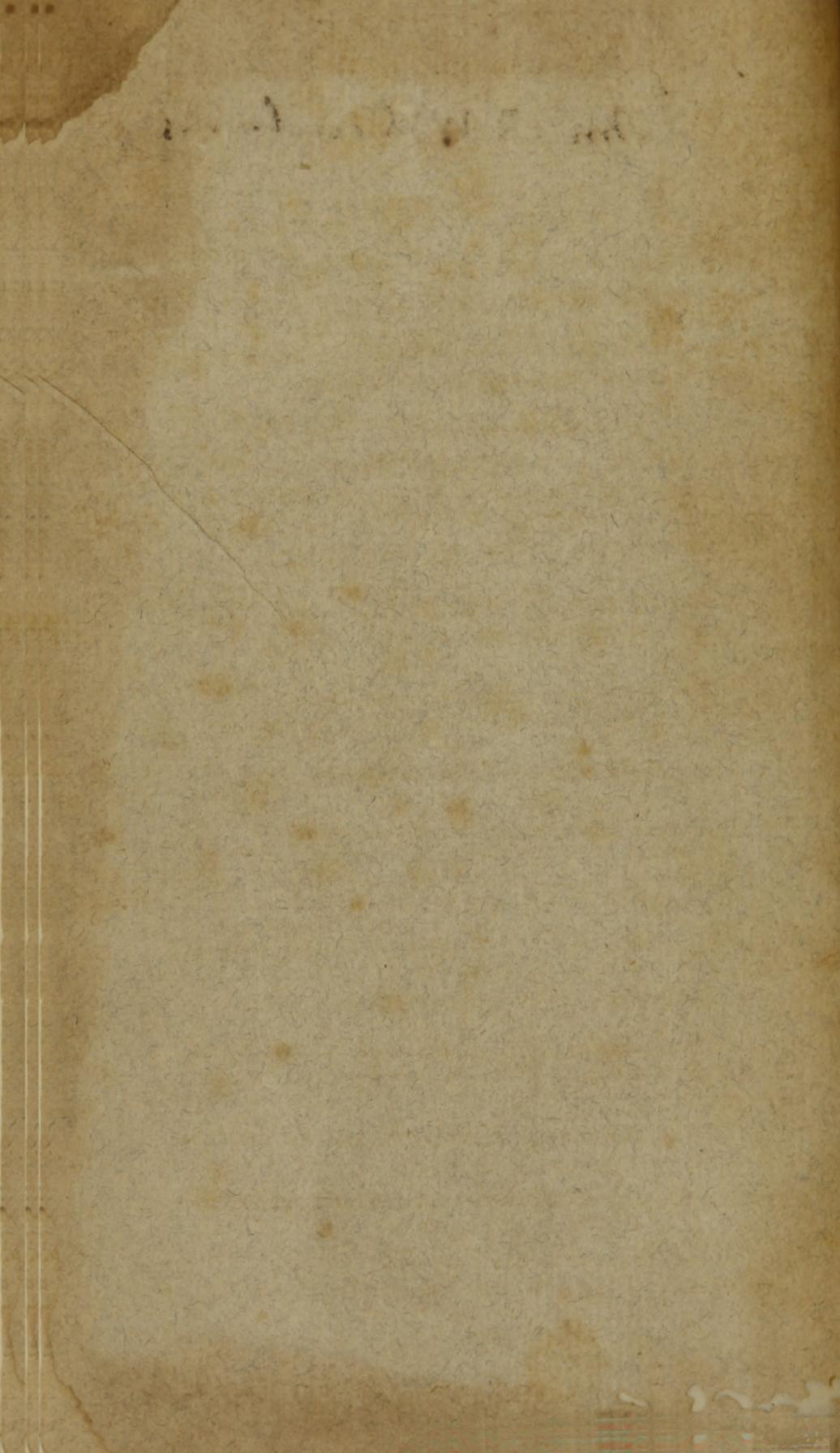
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**U. S. Department of Health, Education, and Welfare**  
**Public Health Service**





John R W Dunbar. s



# LECTURES

*Robert* ON *Duncan*  
DIET AND REGIMEN:

BEING

A SYSTEMATIC INQUIRY

INTO THE MOST RATIONAL MEANS OF PRESERVING  
HEALTH AND PROLONGING LIFE:

TOGETHER WITH

PHYSIOLOGICAL AND CHEMICAL EXPLANATIONS,

CALCULATED CHIEFLY

FOR THE USE OF FAMILIES,

IN ORDER TO BANISH THE PREVAILING ABUSES  
AND PREJUDICES IN MEDICINE.

---

BY A. F. M. WILlich, M. D.

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Qui stomachum regem totius corporis esse  
Contendunt, vera nite ratione videntur:  
Hujus enim validus tenor firmat omnia membra:  
At contra ejusdem franguntur cuncta dolores.

SERENUS SAMMONICUS,  
*De Medicina Præcepta saluberrima.*

TWO VOLUMES ABRIDGED IN ONE.

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The First Boston, from the Second London, Edition.

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CORRECTED AND IMPROVED.

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1800.

THIS WORK  
IS DEDICATED,  
*TO THOSE MOTHERS AND GUARDIANS  
OF FAMILIES,*  
WHOSE  
GREATEST PRIDE AND HAPPINESS IT IS,  
TO REAR  
HEALTHY AND VIRTUOUS CHILDREN;  
AND  
*TO THOSE FRIENDS OF SOCIETY AND  
THEMSELVES,*  
WHO ARE SOLICITOUS  
TO PRESERVE THEIR HEALTH,  
AND TO ADOPT  
THE PARENTAL HINTS OF NATURE,  
RATHER THAN SUBMIT TO  
THE PALLIATIVE RELIEF OF ART.

# Analytical TABLE of Contents.

	Page
INTRODUCTION	1—68
Sate of Medicine, as a Science founded on facts	1—4
Observations on the general laws of Nature	4
Necessity of applying to the study of natural causes	5
Difference of opinions on medical subjects	6
The origin and causes of diseases investigated	9
Cow-pox, a preventive of the Small-pox	13
Remarks illustrating the doctrine of temperaments	14
The absurdity and dangerous tendency of Patent or Quack Medicines pointed out	22
Mr. James Parkinson, on Quack Medicines	24
The nature of fashionable complaints defined	30
The source of them investigated	31
The function of the skin explained	34
The necessity of bathing inculcated, as the best sub- stitute for universal remedies	41
The nature and properties of Cosmetics examined	43
The only effectual substitutes for them recommended, and injunctions relative to the improvement of the skin	46
Strictures on the physical education of children	49
Frequent bathing, an useful practice in infancy	53
The proper temperature of the Bath, and its general effects	ib.
The cold Bath frequently dangerous to children	ib.
The lukewarm or tepid Bath far preferable	ib.
Directions to use this Bath with advantage	56
The utility of the <i>Air Bath</i> pointed out	57
Shortness of Sight and weakness of the Eyes	58
Importance of spacious nurseries, and airing	59
Hufeland's picture of a child properly managed, with respect to washing, airing, and bathing	60
Anecdote of a Russian postillion	62
Feather-beds and cumbersome Dresses condemned	63
The origin of a <i>sweating Skin</i>	ib.
A proper Couch for Children described	64
Cleanliness, a cardinal virtue in domestic life	ib.
Rickets, cured by cleanliness alone	ib.

	Page
How the head and breast should be covered -	65
Historical anecdote from Herodotus - -	ib.
Sudden improvements not successful - -	66
There is no perfect and permanent state of health	68
Quotation from Cicero - - - -	ib.
CHAP. I. <i>On the Means of preserving Health and prolonging Life,</i> - -	69
Definition of a good state of health - -	ib.
Reasons for being satisfied with our present state -	70
To avoid or cure diseases, we ought to be acquainted with the economy of the human frame -	ib.
The pretended purpose of <i>Nostrums</i> explained -	71
Man has always more or less valued a long life -	ib.
The method of prolonging life adopted by the <i>Oriental</i> s	72
The same plan prescribed by Boerhaave - -	73
The inefficacy of it demonstrated - - -	74
The Egyptians resorted to Sudorifics and Emetics -	76
The Greeks employed natural means - - -	77
The great advantage of <i>Gymnastic Exercises</i> considered	78
Modern methods of bracing the body - - -	80
Excellence of the Grecian method - - - -	ib.
Plutarch's golden precepts - - - -	81
Review of the barbarity of the middle ages -	82
The Alchemists in search of <i>original matter</i> -	83
The Tincture of Gold introduced - - - -	84
Sketch of the Goldmakers, Rosencrucians, &c. -	85
Productions of Alchemy shorten life - - -	87
They impair the <i>susceptibility</i> , or power of receiving <i>vital supplies</i> - - - -	88
Theophrastus Paracelsus, an insurer of lives -	ib.
The world of spirits is summoned to assist - -	89
The professors of <i>Astrology</i> begin their impositions	90
The noted Thurneisen appears at Berlin - - -	91
Exposition of that <i>occult science</i> , Astrology -	ib.
Cornaro shows the absurdity of resorting to supernat- ural means, by his illustrious example -	94
<i>Bloodletting</i> came into general use - - -	98
In what cases Venesection may be of advantage	100
Definition of the <i>Art of prolonging Life</i> - -	ib.
The nature of the <i>Blood</i> investigated - - -	ib.
Libavius discovers the transfusion of the blood -	102

	Page
A short account of the <i>Paracelsian Theosophists</i>	103
The process of <i>Transfusion</i> described	104
Lord Bacon deviates from the true path of inquiry	106
He advises the repetition of powerful laxatives every two or three years—his theory controverted	107
Modern method of computing the duration of life	109
<i>Medical imposture</i> still prevalent in our enlightened age	110
Perkins' Metallic Tractors exploded	111
The fanatical system of Jacob Böhmen	112
Messmer appears, with his <i>Animal Magnetism</i>	113
An account of his artful proceedings	ib.
His advertisement extraordinary	116
He imposes upon the French government	117
— realizes a princely fortune in Paris	118
— is at length proved to be either a fanatic or impostor	119
Lavater's <i>Animal Magnetism</i> and <i>Somnambulism</i>	120
Messmer's system exploded	121
St. Germain's Tea for prolonging life	ib.
D'Ailhoud's deleterious Powder	122
Cagliostro, an impostor with his <i>Balm of Life</i> , &c.	ib.
Father Gassner ascribes all diseases to diabolical agency	123
Count Thunn, a German fanatic, obtains no credit	124
All specifics and plans for prolonging life rest upon erroneous principles	125
Conditions requisite to attain a long life	ib.
1. Bodily and mental disposition to longevity	ib.
2. A sort of hereditary disposition	126
3. A child's perfect birth, and mother's proper conduct	ib.
4. A gradual culture of the physical and mental faculties	127
5. A constant habit of brooking and resisting the various impressions of external agency	129
6. A steady and equal progress of life	131
7. A sound state of digestion	ib.
8. Equanimity of mind—avoiding violent exertions	132
Concluding remarks on the subject of <i>Longevity</i>	133
On the symptoms of actual <i>Dissolution</i>	134
Account of a new Institution in Germany	135
Cases in which death can be clearly ascertained	136
Symptoms where death is less certain	137
Children and young persons should not too hastily be considered as dead	138

	<i>Page</i>
Summary account of a <i>Dietetic System</i> - - -	139
Explanation of the <i>Six Non-naturals</i> - - -	140
Present mode of living compared with that in a state of nature - - - - -	141
Many writers misled by partial inquiries - - -	142
Illustrations relative to a <i>Dietetic System</i> - - -	143
CHAP. II. <i>Of Air and Weather</i> - - -	
Of Air in general— <i>Respiration</i> - - - - -	<i>ib.</i>
Definition of Air and Atmosphere - - - - -	<i>ib.</i>
Pressure of Atmosphere incumbent on our bodies	148
Component parts of the Atmosphere - - - - -	149
Concise History of Oxygen - - - - -	<i>ib.</i>
Properties of Oxygen, and its effects on respiration	150
----- Azote - - - - -	151
----- Carbonic Acid Gas, or Fixed Air	<i>ib.</i>
----- Inflammable Air - - - - -	152
Specific gravity of the different Airs - - - - -	153
Noxious effects of mephitic gases - - - - -	<i>ib.</i>
----- the vapours of Lead - - - - -	154
The chemical process in improving and restoring At- mospheric Air described - - - - -	155
General Remarks relative to the advantages to be de- rived from a systematic view of <i>Dietetics</i> - - -	156
Effects of warm and cold air on the body - - -	157
----- damp or moist air - - - - -	158
----- dry and cool air - - - - -	159
----- sudden changes of air - - - - -	<i>ib.</i>
----- the different winds - - - - -	160
On the relative salubrity of the different Seasons	<i>ib.</i>
Effects of strongly scented bodies - - - - -	162
----- dwelling on lakes, marshes, and rivers	163
Which is the most wholesome air to live in - - -	164
<i>Of the improvement of Air in Dwelling-houses</i> - - -	
Situation of a house in point of health - - -	166
Criterion of a damp and unwholesome air - - -	<i>ib.</i>
The most proper situation of a sitting-room - - -	167
Different strata of Air in a room - - - - -	<i>ib.</i>
Modes of purifying the air by ventilators - - -	<i>ib.</i>
Rules respecting the admission of fresh air - - -	168
----- in moist and cold air—moist and warm air - - -	170
----- in hot and dry air - - - - -	171

Page

Effects from exhalations of green plants and flowers	171
————— large trees with thick foliage	172
————— the burning of candles	<i>ib.</i>
————— the steam of cooked provisions	<i>ib.</i>
————— exhalation of green fruit, oil, tallow, &c.	173
————— the vapours of charcoal	<i>ib.</i>
————— impure wool, oil, colours, &c.	174
————— keeping wet substances in dwelling-rooms	<i>ib.</i>
General effects of <i>Heat</i> and <i>Cold</i>	175
————— sudden transitions	<i>ib.</i>
Of the proper dress for the season	176
Of heating rooms in autumn	<i>ib.</i>
Of exposing the body to the bracing effects of cold	177
Precautions respecting changes of temperature	178

### CHAP. III. *Of Food and Drink* - 181

Introductory remarks on the nature and effects of Food and Drink	<i>ib.</i>
---	------------

#### *Of Food in particular.*

Rules relative to the quantity of food	185
On the different kinds of <i>appetite</i>	186
Remarks on the quantity of aliment—on the nature of digestion and nutrition—mode and time of taking food	189
On the propriety of sleeping after dinner	196
A discussion on the general effects of animal food	202
<i>Of Animal Food</i>	<i>ib.</i>
The properties of game	<i>ib.</i>
Different methods of dressing victuals investigated	203
Digestibility of animal and vegetable substances	204
On preternatural hunger	206
Of animal jelly—the flesh of different animals com- pared as to its salubrity	<i>ib.</i>
On the properties of Veal	209
————— Beef	211
————— Pork	212
————— Smoked Hams	215
————— Sausages and Bacon	<i>ib.</i>
————— Lard—Sheep—Lamb	216
————— House-lamb—Goats—Deer, Venison, and Hare.	217

	<i>Page</i>
On the properties of the Lungs, Liver, Heart, and Kidneys of animals - - -	218
----- the Fat of Animals - - -	219
----- Blood - - -	<i>ib.</i>
----- Milk - - -	<i>ib.</i>
Directions for making <i>artificial Ass's Milk</i> - -	222
On the properties of Cream, Butter, and Butter-milk	224
----- Cheese - - -	225
Cheese forms the strongest cement yet contrived	226
On the relative wholesomeness of Birds in general	227
----- Bird's Eggs -	230
On the various methods of preserving Eggs - -	231
An account of Mr. Donaldson's Patent - -	<i>ib.</i>
On the properties and effects of Fish - - -	232
----- amphibious animals, Lobsters, Crabs, and Oysters - - -	234
Turtles - - -	233
The legs of Frogs used as food - - -	<i>ib.</i>
On the properties and effects of Snails and Muscles	235
<i>Of Vegetable Aliment</i> - - -	236
Division of the vegetable articles of nourishment into five orders - - -	<i>ib.</i>
1. The farinaceous Vegetables:—Bread, its nature and properties reviewed - - -	<i>ib.</i>
Rice - - -	240
Oats - - -	<i>ib.</i>
Barley - - -	241
Millet - - -	<i>ib.</i>
Mannagrass - - -	<i>ib.</i>
2. The leguminous productions, as Beans, Peas, &c.	242
Green Peas - - -	243
3. The various kinds of Salads and Herbs used for cooking - - -	243
Asparagus - - -	245
Artichokes - - -	<i>ib.</i>
Of Salads—Spinage—Sorrel - - -	<i>ib.</i>
— Red and White Cabbage— <i>Sauer Kraut</i> - -	246
— Lettuce - - -	247
4. The esculent roots used at table - - -	<i>ib.</i>
Beet-root - - -	249
Of Carrots—Turnips - - -	250
Of Parsley, Smallage, Celery, &c. - - -	251
Barbnips - - -	<i>ib.</i>

	<i>Page</i>
Scorzenera, Skirret-root, Salsafy	251, 252
Of Onions, Garlic, Shallot, and Chives	<i>ib.</i>
— Radishes	<i>ib.</i>
Arrow-root	253
5. Fruit, or the production of trees and shrubs	<i>ib.</i>
Sago	255
Of Cherries	<i>ib.</i>
— Plums, Peaches, Apricots, Pears	257
— Tamarinds, Apples, Quinces	259, 260
— Lemons, Oranges, Limes, &c.	<i>ib.</i>
— Raisins	262
Vegetable Acids excellent correctors of Opium	261
Of Currants, Gooseberries, Grapes, and Strawberries	262
Strawberries, a preventive against the Stone in the Kidneys	264
Of Cucumbers and Melons	<i>ib.</i>
— Gourds, Olives	265
— Almonds, Walnuts, Hazlenuts, and Nuts in general	<i>ib.</i>
— Mushrooms	266
<i>Of Drink in particular</i>	267
I. With respect to the <i>quantity</i> and <i>time</i> of Drinking	<i>ib.</i>
II. With respect to its <i>quality</i>	271
Of Spring, Well, River, and Lake-Water	272
— Rain, Snow, Hail-Water, and Dew	273
Various methods of correcting bad Water, and pre- serving it when fresh	274
Division of <i>Wines</i> into five principal Classes	275
Of Cyder and Perry	276
Constituent parts of Wine	<i>ib.</i>
Its properties and effects in general	277
The state of Intoxication explained	278
How to treat a person in that state	279
Effects of a copious use of Wine	<i>ib.</i>
On the adulterations of Wine, and the dangers at- tending them	280
Directions for detecting adulterated Wines	282
HÄHNEMANN'S <i>Liquor vini probatorius</i>	283
Of ardent Spirits, their general properties, &c.	285
Of Beer, its ingredients, adulterations, properties, &c.	287
— Tea, its properties and effects on the System	292
Substitutes for Indian Tea recommended	295
Of Coffee, its effects on particular constitutions	296
— Chocolate, Punch, Negus, Vinegar, Oil	297—302

	<i>Page</i>
<i>Of Spices</i> - - - -	303
Of Salt - - - -	<i>ib.</i>
Lord DUNDONALD's method of purifying Salt	<i>ib.</i>
Of Sugar, Honey, Pepper - - -	304—306
— Cubebs, Cardamoms, Vanilla, &c. - -	307
— Cloves, Mace, Nutmeg, Cinnamon, Cassia, Pimen- to (Allspice) and Ginger - - -	<i>ib.</i>
— Parsley, Marjoram, Thyme, Sage - -	309
— Carraway, its effects in flatulency, hysterics, &c.	<i>ib.</i>
<i>Classification of the various articles used as Food, Drink, and Spices</i> - - - -	311
I. <i>Food</i> : Alimentary substances containing whole- some fluids - - - -	<i>ib.</i>
----- unwhole- some fluids - - - -	314
II. <i>Drink</i> : Watery Liquors—Spirituos Liquors	315
III. Spices - - - -	316
 CHAP. IV. <i>Of Evacuations</i> - - -	 317
On the Importance of these functions - - -	<i>ib.</i>
The three principal emunctories defined - -	<i>ib.</i>
<i>Of Evacuations by Stool</i> - - - -	319
Consequences of neglecting them - - -	<i>ib.</i>
Means promoting them, and preventing costiveness	320
Different appearance and effect of such discharges	323
The causes of obstructions and costiveness ascertained	325
The means of preventing them pointed out - -	226
How to guard against too frequent excretions - -	328
Necessity of water-closets and other precautions	329
<i>Of Urine</i> - - - -	330
Of the quality and quantity of this discharge - -	<i>ib.</i>
Of the prognostics from its appearance - -	331
Of the nature and origin of urinary complaints	332
<i>Of Insensible Perspiration</i> - - - -	334
The nature and great importance of this function	335
Circumstances suppressing and affecting perspiration	<i>ib.</i>
----- tending to promote it - - -	337
Distinction between perspiring and sweating - -	338
Effect of Cold on insensible perspiration - -	339
----- of Food and Drink on the same - -	340

	<i>Page</i>
Effect of the depressing passions and emotions	340
How too violent perspiration should be treated	341
On the common treatment of Colds - - -	<i>ib.</i>
On excessive bleedings in general - - -	342
Of the Saliva--smoking Tobacco censured -	<i>ib.</i>
Of the mucus of the nose--the habit of taking Snuff, and its dangerous consequences - - -	344
The <i>acromatic belts</i> and <i>sneezing powders</i> of a certain empiric animadverted upon - - -	<i>ib.</i>
Of the wax in the Ears - - -	347
Of Hemorrhages ; the menses, hemorrhoids, &c.	<i>ib.</i>
Of the retention of the <i>Milk</i> - - -	348

### CHAP. V. *Of the Sexual Intercourse* 350

On the important consequences attending the exer- cise of this function - - -	<i>ib.</i>
Conditions under which it is conducive to the well- being of the individual - - -	352
In what cases it is detrimental to Health -	354
Observations relative to the loss of semen -	356
Situations unfavourable to the Sexual Intercourse	357
Nature and constituent parts of the seminal fluid	360
On the proper time for this intercourse, &c. -	362
Of the proper time and requisites to a married life	366
On the general effects of too great abstinence	367
----- means of restoring the impaired energy, <i>aphro-</i> <i>disiacs</i> - - - - -	369
----- means of diminishing the desire of venery	370
View of the principal theories of Generation	372
Of <i>Panspermia</i> -- <i>generatio æquivoca</i> - - -	<i>ib.</i>
HAMMON discovers animalculæ in the semen -	374
BUFFON'S opinion on this subject refuted -	375
HALLER'S and BONNET'S theories examined -	376
The theory of <i>Evolution</i> reviewed, with Prof. BLU- MENBACH'S facetious remarks - - -	<i>ib.</i>
Remarks on the origin of the chicken in the egg	377
SWAMMERDAM'S and SPALLANZANI'S discoveries	<i>ib.</i>
Singular story of a miller's wife - - -	379
<i>Epigenesis</i> , or the theory of gradual formation	380
BLUMENBACH'S definition of the <i>Nifus formativus</i>	<i>ib.</i>

# I N D E X.

## A

	Page
<i>ABSTINENCE</i> from sexual intercourse	367
<i>Acids</i> , vegetable, when useful in colic	27
their general properties	261, 262
good correctors of opium	ib.
<i>Agency</i> , external, should be habitually resisted	129
diabolical, in diseases, maintained by <i>Gassner</i>	123
<i>Air</i> , its great influence on the body	147, 148
definition of	149, 157
atmospheric, how it may be improved	154, 157
effects of warm and cold, on the body	ib.
damp or moist	158
dry and cool	159
sudden changes of	ib.
the most wholesome to live in	163, 164
criterion of a damp one	144
different strata of it in a room	167, 169
the different states of	170
and atmosphere, general reflections upon	157
<i>Alchemists</i> , in search of <i>original matter</i>	86
<i>Alchemy</i> , its productions tend to shorten life	87
<i>Aliment</i> , on the quality of	190
vegetable, generally considered	236
<i>Almonds</i> , properties of	265, 266
<i>Amphibious</i> animals, properties and effects of,	
as food	233, 234
<i>Animalcula</i> , discoverable in the semen	374
<i>Aphrodisiacs</i> , how far admissible	369
<i>Apples</i> , properties and effects of	259, 260
<i>Apricots</i> , properties and effects of	258
<i>Arrow-root</i> , properties of	253
<i>Artichokes</i> , properties of	245
<i>Asparagus</i> , properties of	ib.
<i>Ass's Milk</i> , directions for making artificial	222
<i>Astrology</i> , its professors are impostors	90
<i>Atmosphere</i> , definition of,	149
account of its pressure	ib.
component parts of	ib.
<i>Azote</i> , proportion of in the atmosphere	151
properties of, and effects on respiration	ib.

B		Page
<i>BACON, LORD,</i> quotation from	- -	24
deviates from the true path of inquiry	-	106
recommends the bath, frictions	-	
with oil, &c.	- -	ib.
erroneously advises laxatives for	-	
the prolongation of life	- -	107
his theory refuted	- -	108
his remarks on longevity	- -	110
<i>Bacon,</i> properties of	- - -	215
<i>Barbarity</i> of the middle ages reviewed	- -	82
<i>Barley,</i> properties of	- - -	241
<i>Barometers,</i> living ones described	- - -	31
<i>Bath,</i> its temperature and general effects	- -	53
the cold, frequently dangerous to children	-	ib.
the tepid, or lukewarm, far preferable	-	ib.
<i>Bathing,</i> not sufficiently attended to	- -	ib.
the necessity of inculcated	- -	54
frequent, in infancy recommended	- -	53
<i>Beans,</i> properties of	- - -	243
French, properties of	- - -	ib.
<i>Beef,</i> properties of	- - -	211
<i>Beer,</i> ingredients, adulterations, and properties of	- -	287
<i>Beet-root,</i> properties of	- - -	249
<i>Belts,</i> acromatic, an imitation of animal magnetism	- -	344
<i>Bile,</i> black, produces a wild imagination	- -	78
<i>Birds,</i> their relative salubrity as food	- -	227
eggs, whether wholesome	- -	230
<i>Bleedings,</i> if excessive, detrimental to health	- -	341
<i>Blood,</i> the nature of, investigated	- - -	100
the transfusion of, described	- - -	102
of animals, whether eatable	- - -	219
<i>Blood-letting,</i> how it became fashionable	- -	98
when beneficial	- -	99
always noxious to the healthy	- -	100
persons accustomed to, die at an early age	- -	101
<i>BLUMENBACH'S</i> Prof. remarks on the theory of Evo-	- - -	
lution	- - -	379
<i>Nisus formativus</i>	- - -	380
<i>BOERHAVE'S</i> singular advice	- - -	73
facetious remark on longevity	- -	126

	<i>Page</i>
<i>BOETIC</i> or rustic temperament described -	22
<i>BÖHMEN</i> 's fanatical system revived in Germany	112
<i>BONNET</i> 's theory of generation examined -	376
<i>Bread</i> , the nature and properties of - -	236
<i>BUCHAN, DR.</i> quotations from - - - 198,	296
<i>BUFFON</i> 's opinion on the subject of generation refuted	374
<i>Butter</i> , properties of - - -	224
<i>Butter-milk</i> , properties of - - -	225
C	
<i>Cabbage</i> , red and white, properties of -	245
<i>CAGLIOSTRO</i> 's Balm of Life, an imposition -	122
<i>Caloric</i> , its influence on the living principle -	107
<i>Carbonic acid air</i> , properties and effects of, on respiration - - -	151
<i>Cardamoms</i> , properties of - - -	307
<i>Carraway</i> , effects of, in flatulency and hysterics	309
<i>Carrots</i> , general properties of - -	250
<i>Cassia</i> , properties of - - -	308
<i>Causes</i> , natural, ought to be studied -	9
<i>Cheese</i> , properties of - - -	225
<i>Cherries</i> - - -	255
<i>Chicken in the egg</i> , remarks on the origin of -	377
<i>Child</i> , a perfect birth of, necessary to longevity	126
<i>Children</i> and young persons ought not to be too hastily buried - - -	134
<i>Chiragra</i> of the ancients, nearly obsolete -	31
<i>Chives</i> , properties of - - -	252
<i>Chocolate</i> , properties of - - -	299
<i>Choleric</i> temperament described - -	21
<i>CICERO</i> 's idea of moral perfection quoted -	68
<i>Cinnamon</i> , properties of - - -	308
<i>Classification</i> of food, drink, and spices -	311
<i>Cleanliness</i> in children inculcated - -	60
<i>Cloves</i> , properties of - - -	307
<i>Coffee</i> , properties of - - -	296
<i>Cold</i> , general effects of - - -	159
bracing to the body - - -	160
<i>Colic</i> may arise from a variety of causes -	26
<i>Consumption</i> , alarming increase of - -	178
<i>COOK, CAPT.</i> relieved from rheumatic pains by friction	80

	<i>Page</i>
<i>Copper</i> of the face, origin of - -	47
<i>CORNARO's</i> illustrious example in diet - -	94
<i>Cosmetics</i> , minor, account of - -	44
modern, dangerous - - -	45
nature and properties of - -	46
substitutes for - - -	ib.
<i>Costiveness</i> , how to prevent - -	326
the causes of it ascertained - -	328
<i>Couch</i> , a proper one for children - -	63
<i>Cow-pox</i> proposed as a preventive of the Small-pox	13
<i>Crabs</i> , properties of - - -	234
<i>Cream</i> , properties of - - -	224
<i>Cubebs</i> , properties of - - -	307
<i>Cucumbers</i> , properties of - - -	264
<i>Currants</i> , properties of - - -	262
<i>Custom</i> , a singular, among the Egyptians - -	76
<i>Cyder</i> , properties of - - -	276

## D

<i>D'AILHOUD's</i> deleterious powder - -	122
<i>Dancing</i> , violent, a great enemy to beauty - -	47
<i>Death</i> , cases in which it is certain - -	136
uncertain symptoms of - - -	137
<i>Deer</i> , properties of the flesh of - -	217
<i>DENIS</i> promoted the transfusion of the blood	105
<i>Dew</i> , whether wholesome - - -	274
<i>Dietetic</i> system, summary account of - -	139
further illustrations of - -	140
advantages to be derived from	145
<i>Difference</i> of opinions on medical subjects account- ed for - - -	6
<i>Digestibility</i> of animal and vegetable substances	204
<i>Diseases</i> , origin and causes of, investigated - -	9
<i>Disposition</i> , a certain hereditary, requisite to longevity	125
<i>Dissolution</i> , actual, symptoms of - -	136
<i>Drink</i> , on the nature and effects of - -	181
<i>Drinking</i> , quantity and time of - -	267
with respect to the quality of liquors	271
<i>DUNDONALD's</i> , Lord, invention for purifying salt	303
<i>Dwelling</i> near lakes, marshes, and rivers, whether wholesome - - -	163

## E

	<i>Page</i>
<i>Ear-wax</i> , short account of	347
<i>Education</i> , physical, of children, is much neglected	49
practical remarks and strictures upon	ib.
<i>Efforts</i> of the body, if violent, bring on the symptoms of age	79
<i>Eggs</i> , various methods of preserving	231
<i>Egyptians</i> , the cause of their thick skulls	65
formerly made use of sudorifics and emetics to prolong life	77
<i>Electric</i> principle in the atmosphere	17
<i>Emetics</i> , when useful in colic	27
<i>Emunctories</i> , the three principal, defined	318
<i>Energy</i> , if impaired, how to restore	368
<i>Epigenesis</i> , or the theory of gradual formation	380
<i>Evacuations</i> , great importance of	319
consequences from neglecting them	320
means of promoting	326
<i>Excretions</i> by stool, if too frequent, effects of	328
<i>Exhalations</i> , the effects of, arising from various substances	162
<i>Eyes</i> , the weakness of, and shortness of sight, accounted for	59

## F

<i>Faculties</i> , physical and mental, ought to be gradually cultivated	127
<i>Fashionable</i> complaints, the nature of them defined	30
<i>Fat</i> of animals, whether wholesome	204
<i>Feather-beds</i> censured	63
<i>Fibres</i> , the bracing of, explained	79
<i>Figs</i> , properties of	263
<i>Flesh</i> of different animals compared	208
<i>Fluids</i> , wholesome, in alimentary substances	311
unwholesome	314
<i>Food</i> , nature and effects of, on the body	181
on the quantity of	186
animal, general effects of, discussed	188
classification of	311
<i>Frogs</i> , their legs used as food	233
<i>Fruit</i> , properties of, in general	253

	G	Page
<i>Game</i> , properties of	- - -	202
<i>Garlic</i> , properties of, as food	- - -	252
<i>GASSNER</i> ascribes all diseases to diabolical agency	- - -	123
<i>GELLIUS</i> 's remark on the sixty-third year of life	- - -	130
<i>Generatio æquivoca</i> , what	- - -	372
<i>Generation</i> , principal theories of	- - -	ib.
<i>Gentle</i> temperament described	- - -	22
<i>Goats</i> , properties of their flesh	- - -	222
<i>Gold</i> , the tincture of, introduced	- - -	83
<i>Gold-makers</i> , sketch of	- - -	85
<i>Gooseberries</i> , properties of	- - -	263
<i>Gourds</i> , properties of	- - -	265
<i>Grapes</i> , properties of	- - -	262
<i>Gravity</i> , specific, of the different airs	- - -	153
<i>Greeks</i> , the ancient, employed the best means of pro- longing life	- - -	78
<i>Gymnastics</i> , the great benefit of	- - -	ib.

## H

<i>HAHNEMANN</i> 's <i>Liquor vini probatorius</i>	- - -	283
<i>HALLER</i> 's theory of generation examined	- - -	376
<i>Hammon</i> discovers animalculæ in the semen	- - -	374
<i>Hams</i> , smoked, properties of	- - -	215
<i>Hare</i> , properties of its flesh	- - -	217
<i>Hazel-nuts</i> , properties of	- - -	265
<i>Health</i> , perfect state of, defined	- - -	67
<i>Heart</i> , of animals, whether wholesome food	- - -	218
<i>Heat</i> , general effects of	- - -	175
<i>Hemorrhages</i> , or bleedings, what	- - -	347
<i>Hemorrhoids</i> , or piles, connected with the gout and hypocondriasis	- - -	31
origin of, explained	- - -	347
<i>HERODOTUS</i> , historical anecdote from	- - -	65
<i>Herrings</i> , properties of	- - -	233
<i>HOFFMAN</i> , <i>MORITZ</i> , recommends the transfusion of the blood	- - -	102
<i>Hollands</i> , when useful in colic	- - -	26
<i>Honey</i> , properties of	- - -	306
<i>Houses</i> , improvement of the air in	- - -	167
situation of them in point of health	- - -	165

	<i>Page</i>
<i>HUFELAND's</i> picture of a child properly treated in its physical education - - -	60
<i>Hunger</i> , preternatural, what - -	206
<i>HUXHAM, DR.</i> quoted respecting Quacks -	28
<i>Hypocondriacal</i> temperament described -	21

## I

<i>Jelly</i> , animal, properties of - -	206
<i>Imagination</i> has a great share in prolonging life	74
may be disordered by black bile -	78
<i>Impostures</i> , in medicine, still prevalent -	111
<i>Improvements</i> ought not to be sudden -	65
<i>Inflammable</i> air, how obtained - -	152
<i>INGENHOUSZ's</i> experiments upon vegetables -	155
<i>Inquiry</i> , partial methods of - -	119
<i>Institution</i> , account of a curious one in Germany	134
<i>Intoxication</i> , the state of, explained -	278
how to be treated - -	279

## K

<i>Kidneys</i> of animals, whether wholesome food	218
---	-----

## L

<i>Lamb</i> , properties of, as food - -	217
<i>Lard</i> , properties of - - -	216
<i>LAVATER</i> promulgates animal magnetism and somna- bulism - - -	120
<i>Laws</i> general of Nature, commented upon -	4
<i>Lead</i> , a frequent ingredient in cosmetics -	44
its noxious vapours described -	153
<i>Lemons</i> , properties of, as food - -	260
<i>Lentils</i> , properties of, as food - -	242
<i>Lettuce</i> , properties of, as food - -	247
<i>LIBAVIUS</i> discovers the transfusion of the blood	102
<i>Life</i> , a long one has ever been valued -	72
the art of prolonging, defined -	101
the duration of, how computed by the Moderns	109
cannot be prolonged by specifics, or any artifi- cial means - - -	125
principle of, as conceived by the Ancients	126
conditions requisite to the prolongation of	ib.

	Page
<i>Life</i> , critical period of - - -	129
a steady and equal progress of, required to longevity - - -	130
<i>Limes</i> , properties of, as food - - -	260
<i>Liquors</i> , heating, are a liquid fire - - -	47
watery, division of - - -	315
<i>Liver</i> , of animals, whether wholesome food -	218
<i>Living</i> , the present mode of, compared with that in a state of nature - - -	141
<i>Lobsters</i> , properties and effects of, as food -	234
<i>Longevity</i> , bodily and mental disposition to -	74
concluding remarks on the subject of -	84
<i>LOWER</i> promoted the scheme of transfusion -	105
<i>Lungs</i> of animals, whether wholesome food -	218

## M

<i>Mace</i> , properties of, as a spice - - -	307
<i>Magnetism</i> , animal, account of - - -	111
patronized by Lavater - - -	120
<i>Manchineel-tree</i> , poisonous shade of - - -	163
<i>Manna-grass</i> , properties of - - -	241
<i>Marjoram</i> , properties of - - -	309
<i>Married state</i> , proper time and requisites to -	366
<i>Matter</i> , original, of the alchemists - - -	83
<i>Meat</i> , on the method and time of taking - - -	192
<i>Medicine</i> , present state of, as a science - - -	1
<i>Melancholic</i> temperament described - - -	21
<i>Melons</i> , properties of - - -	264
<i>Menses</i> , what - - -	347
<i>Mephitic</i> gases, noxious effects of - - -	153
<i>Mercury</i> , a frequent ingredient in cosmetics -	44
<i>MESSMER'S</i> medical knight-errantry - - -	111
animal magnetism described - - -	113
his advertisement extraordinary - - -	116
impositions on the French Government -	117
realizes a princely fortune - - -	ib.
is detected as a knave or fanatic - - -	119
his system exploded - - -	121
<i>Metallic Traitors</i> , quotation from the Monthly Review respecting them - - -	111
<i>Milk</i> , properties of, as food - - -	219

	<i>Page</i>
<i>Milk</i> , retention of - - -	348
<i>Millet</i> , properties of - - -	241
<i>Mind</i> , equanimity of, essential to longevity -	132
<i>Mothers</i> , proper conduct of, essential to the longevity of their children - - -	126
<i>Mucus</i> of the nose, what - - -	344
<i>Mushrooms</i> , properties of - - -	266
<i>Mutton</i> , properties of - - -	216
N	
<i>Negus</i> , relative salubrity of - - -	301
<i>Non-naturals</i> , six, explained - - -	140
<i>Nostrums</i> , definition of - - -	23
pretended purpose of, expounded -	71
<i>Nursery</i> , should be spacious and airy -	59
<i>Nutmeg</i> , properties of - - -	307
<i>Nuts</i> , in general, properties of - - -	265
O	
<i>Oats</i> , properties of - - -	241
<i>Obstructions</i> , the causes of, pointed out -	325
the means of preventing -	326
<i>Oeconomy</i> of the human frame should be studied	69
<i>Oil</i> , vegetable, when useful in colic - -	27
properties of - - -	302
<i>Olives</i> , properties of - - -	265
<i>Onions</i> , properties of - - -	252
<i>Opium</i> , much used by the Turks - - -	133
<i>Oranges</i> , salutary effects of - - -	260
<i>Oriental</i> s, their method of prolonging life -	72
<i>Oxygen</i> , proportion of, in the atmosphere -	149
concise history of - - -	150
properties and effects of, on respiration	151
<i>Oysters</i> , properties of - - -	235
P	
<i>Panaceas</i> , or universal remedies, defined -	22
<i>Panspermia</i> , what - - -	372
PARACELsus, an impudent insurer of lives -	88
his early death - - -	103
PARKINSON, MR. JAMES, quoted on the subject of quack medicines - - -	24

	<i>Page</i>
<i>Parsley</i> , properties of, as food	250
as a spice	309
<i>Parsnips</i> , properties of	250
<i>Pastry-cooks</i> and confectioners prepare unwholesome mixtures	49
<i>Patent</i> or Quack Medicines exploded	22
why dangerous	25
<i>Patent</i> , account of Mr. Donaldson's	231
<i>Peaches</i> , properties of	257
<i>Pears</i> , properties of	258
<i>Peas</i> , properties of	243
green, properties of	ib.
<i>Pepper</i> , properties of	306
<i>PERKINS'S metallic traçtors</i> exploded	111
<i>Perry</i> , properties of	276
<i>Persians</i> , the cause of their thin skulls	65
<i>Perspiration</i> , insensible, the nature and importance of	334
how affected and suppressed	337
how promoted	338
how influenced by food and drink	340
by the depressing passions and emotions	ib.
if violent, how to be treated	341
<i>Perspiring</i> and sweating, how distinguishable	336
<i>Phlegmatic</i> temperament described	22
<i>Pimento</i> , properties of	308
<i>Plums</i> , properties of	257
<i>PLUTARCH'S</i> golden precepts	81
<i>Podagra</i> of the Ancients, now almost unknown	31
<i>Pork</i> , whether wholesome	214
<i>PRIESTLEY'S</i> important discovery	154
<i>Punch</i> , properties and effects of, on the body	301

## Q

<i>Quack</i> or Patent medicines exploded	22
<i>Quinces</i> , properties and effects of	260

## R

<i>Radishes</i> , properties of	252
<i>Reason</i> , this is not the age of	110

	<i>Page</i>
<i>Religion</i> , the Christian, misapplied by the alchemists	86
<i>Respiration</i> , the principal function of the animal body	147
<i>Rice</i> , properties of	240
<i>Rickets</i> cured by cleanliness alone	61
<i>Rooms</i> , sitting, the most proper situation of	166
of heating, in Autumn	176
<i>Roots</i> , esculent, account of	247
<i>Rosenerucians</i> , sketch of	83
ROSENKREUZ, a great adventurer and founder of a sect	103
<i>Russians</i> , great friends of bathing	62

## S

<i>Sage</i> , properties of	309
<i>Sago</i> , properties of	255
<i>Salads</i> and herbs for cooking, properties of	244
<i>Saliva</i> , use of, to the body	342
<i>Salsafy</i> , properties of	252
<i>Salt</i> , properties of	303
new mode of purifying	304
<i>Sanguine</i> temperament described	20
<i>Sanguineo-choleric</i> described	ib.
<i>Sauer Kraut</i> , properties of	246
<i>Sausages</i>	215
<i>Scented</i> bodies, effects of	162
<i>School-masters</i> , their great age accounted for	73
<i>Scorzenera</i> , properties of	251
<i>Seasons</i> , the different salubrity of	160
<i>Semen</i> , observations on the loss of	350
nature and constituent parts of, explained	360
<i>Sensibility</i> to every change of the atmosphere	30
<i>Sexual Intercourse</i> , how important	350
when conducive to health	351
when detrimental	353
situations unfavourable to	355
the proper time of	360
consequences arising from excess	ib.
<i>Shaddocks</i> , properties of	260
<i>Shallots</i> , properties of	252
<i>Sirocco</i> , influence of, in Sicily	17
<i>Skin</i> , the diseases of, become fashionable	33
the functions of, explained	34
how it may be improved	45

	<i>Page</i>
<i>Skin, sweating</i> , how it arises - - -	62
<i>Skirret-root</i> , properties of - - -	251
<i>Smallage</i> , properties of - - -	250
<i>Small-pox</i> , to be prevented by the Cow-pox -	13
<i>Smoking Tobacco</i> , a bad custom - - -	343
<i>Snails</i> , properties of - - -	235
<i>SOEMMERING's</i> doctrine of temperaments -	14
<i>Somnambulism</i> , what - - -	120
<i>Sorrel</i> , properties of - - -	245
<i>SPALLANZANI's</i> discovery quoted - - -	378
<i>Specifics</i> , defined and commented upon -	22
for prolonging life are absurdities -	125
<i>Spices</i> , properties of, in particular - - -	303
in general - - -	ib.
<i>Spinage</i> , properties of - - -	245
<i>Spirits</i> , ardent, their general properties -	285
<i>ST. GERMAIN's</i> Tea for prolonging life, what	121
<i>Story</i> , a singular one of a miller's wife -	379
<i>Strawberries</i> , properties of - - -	264
<i>Sugar</i> , properties of - - -	304
<i>SWAMMERDAM's</i> discovery quoted - - -	378
<i>Sweating</i> and perspiring, how to be distinguished	336

## T

<i>Tamarinds</i> , excellent properties of - - -	257
<i>Tea</i> , if drunk hot, its effects on the skin -	48
properties and effects of, in general -	292
Indian, substitutes for it - - -	296
<i>Temperaments</i> , peculiarities of, investigated -	14
<i>Temperature</i> , cautions relative to the changes of	175
<i>Theosophists</i> , a short account of - - -	103
<i>THUN, COUNT</i> , a late fanatic at Leipzig -	124
<i>THURNEISEN</i> , a noted astrologer, &c. at Berlin	91
<i>Thyme</i> , properties of - - -	309
<i>Transfusion</i> of the blood described - - -	102
<i>Turnips</i> , (properties of - - -	250
<i>Turtles</i> , properties of - - -	233

## U

<i>Upas</i> , the deadly, of Surinam - - -	163
<i>Urinary</i> complaints, nature and origin of -	333

	<i>Page</i>
<i>Urine</i> , quality and quantity of - -	330
prognostics from the appearance of -	331

## V

<i>Vanilla</i> , properties of - - -	307
<i>Veal</i> , properties of - - -	209
<i>Vegetables</i> , divided into five classes - -	236
farinaceous, nature and properties of	ib.
leguminous - - -	242
<i>Venery</i> , means of diminishing the desire of -	370
<i>Venison</i> , properties of - - -	217
<i>Ventilators</i> for purifying the air in a room -	168
<i>Viſuals</i> , different methods of dressing -	202
<i>Vinegar</i> , properties of - - -	302
<i>Walnuts</i> , properties of - - -	265

## W

<i>Water</i> , of springs, wells, rivers, and lakes -	271
of rain, ſnow, and hail - -	272
dew, whether wholeſome - -	274
if bad, how to purify and preſerve -	ib.
<i>Water-cloſets</i> , a neceſſary precaution -	229
<i>Winds</i> , different effects of, on the body -	160
<i>Wines</i> , diſiſion of, into five claſſes - -	275
conſtituent parts of - - -	276
general properties and effects of -	277
effects from a copious uſe of - -	279
the adulterations of, and dangers attending	280
directions for detecting different adulterations	282
<i>WITHERING's</i> , Dr. ſimple coſmetic - -	46

## INTRODUCTION.

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*On the present State of Medicine as a Science.*

WE apparently live in an age, when every branch of human knowledge is reduced to a popular system ; when the most important sciences lay aside the garb of pedantry and mysticism ; when, in short, the sources of information are open to every rank, and to both sexes. An improvement, which is so conspicuous, must ultimately be attended with the most desirable and extensive effects.

Among other beneficial pursuits to render the comforts of life more numerous and permanent, we have occasion to observe, that Natural Philosophy and Chemistry contribute a principal share in spreading useful knowledge among all ranks of society.

Since Medicine, considered as a science, which rests upon practical rules of experience, is in a great measure founded upon Natural Philosophy and Chemistry, it will be allowed, that with the daily progress of the latter, Medicine also must necessarily partake of their improvements, and continually receive accessions conducive to its further perfection.

With the progressive increase of refinement and luxury, a certain weakness and indisposition, whether real or imaginary, has infested society in the character of a gentle epidemic. It cannot properly be called a disease, but rather an approximation to an infirm state, which almost involuntary compels man to reflect upon the relative situation of his physical nature, to acquire correct ideas on health, disease, and the means of prevention or relief, and thus imperceptibly to become his own guide.

Every individual of any penetration now claims the privilege of his own physician:—It is not unfashionable to form a *certain* system concerning the state of our own health, and to consider it as the criterion, by which we may judge of ourselves and others, of patients and their physicians.

Formerly, people were not accustomed to think of the physical state of their body, until it began to be afflicted with pain or debility: In which case, they entrusted it to the practitioner in Physic, as we deliver a time-piece to a watchmaker, who repairs it according to the best of his knowledge, without apprehending, that its owner will be at the trouble of thinking or reasoning upon the method, which he judged to be most proper.

In our times, we frequently undertake the charge of prescribing medicines for ourselves: And the natural consequence is, that we seldom are able to tell, whether we are healthy or diseased; that we trust as much, if not

more, to ourselves than to the physician, who is only sent for occasionally; and that we cannot conceive him to be perfectly free from the systems of the schools, from self-interest, or professional motives. Thus, by an acquaintance with medical subjects, which of itself is laudable, not only the skill of the physician is frequently thwarted, but the recovery of the patient unhappily retarded, or at least rendered more difficult.

No disease is now cured without demonstration; and he who can neither discover nor comply with the peculiar system of health adopted by his patient, may indeed act from motives dictated by reason and humanity; but his success as a *practical physician*, in the common acceptation of that phrase, must ever remain problematical. Yet this general propensity to investigate medical subjects, if it were properly directed and gratified, might be attended with very happy effects. For the medical art ought not to be subject to an imperious and fascinating demon, whose labors are chiefly carried on in the dark recesses of mystery, whom we know only from his baneful influence, as he spares no objects of prey, and holds his votaries in a perpetual state of dependence!

“The veil of mystery,” says a modern popular writer, “which still hangs over Medicine, renders it not only a conjectural, but even a suspicious art. This has been long ago removed from the other sciences, which induces many to believe, that Medicine is a mere trick, and that it will not bear a fair and can-

did examination. Medicine, however, needs only to be *better* known, in order to secure the general esteem of mankind. Its precepts are such as every wise man would choose to observe, and it forbids nothing but what is incompatible with true happiness."

*Observations on the general Laws of Nature.*

If we reflect upon the admirable uniformity which prevails through the works of nature, both in the production and dissolution of matter, we find that she invariably moves in a circle; that in the perpetual construction, as well as in the subsequent demolition of bodies, she is always equally new and equally perfect; that the smallest particle, though invisible to our eyes, is usefully employed by her restless activity; that death itself, or the destruction of forms and figures, is no more than a careful decomposition and a designed regeneration of individual parts, in order to produce new substances, in a manner no less skilful than surprising. We further observe, that in the immense variety of things, in the inconceivable waste of elementary particles, there nevertheless prevails the strictest economy; that nothing is produced in vain, nothing consumed without a cause. We clearly perceive that all nature is united by indissoluble ties; that every thing exists for the sake of another, and that no one can exist without its neighbor. Hence we justly conclude, that man himself is not an insulated

being, but that he is a necessary link in the great chain, which connects the universe.

Nature is our safest guide, and she will be so with greater certainty, as we become better acquainted with her operations, especially with respect to those particulars which more nearly concern our physical existence. Thus, a source of many and extensive advantages will be opened; thus we shall approach to our original destination—namely, that of living long and healthy.

On the contrary, as long as we move in a limited sphere of knowledge; as long as we are unconcerned with respect to the causes which produce health or disease, we are in danger, either of being anxiously parsimonious, or prodigally profuse of those powers, by which life is supported. Both extremes are contrary to the purpose of nature. She teaches us the rule of just economy;—we, being a small part of her great system, must follow her example, and expend neither too much nor too little of her treasures.

Although it be true that our knowledge of nature is still very imperfect, yet this circumstance ought not to deter us from investigating the means which may lead to its improvement.

We are assisted by the experience of so many industrious inquirers, of so many sound philosophers, that we may flatter ourselves with the hopes of discovering some of her hidden secrets, and of penetrating still further into her wonderful recesses. This, how-

ever, cannot be accomplished, without much patience and perseverance in the student.

All men, it is true, have not sufficient time and opportunities to acquire an accurate and extensive knowledge of nature ; but those are inexcusable, who remain entire strangers to her ordinary operations, and particularly if they neglect to cultivate a proper acquaintance with the constitution of their own frame. If, indeed, we were fixed to the earth like the trees by their roots, or if from mere animal instinct we were stimulated to inquire into the causes of our physical life, we then should vegetate, or live like plants or irrational animals. But, in the character of creatures, who ought to choose and reject agreeably to the dictates of reason, a more assiduous and minute study of nature, as well as of our own frame, is indispensable ; because the human body cannot subsist, unless we second her intentions and cooperate with her beneficent efforts.

*Difference of Opinions on Medical Subjects.*

It is not unfrequently objected, that Medicine itself is an uncertain, fluctuating, and precarious art. One medical school, for instance, considers the mass of the fluids as the primary cause of all diseases ; another ascribes them to the irregular action of the solids, and particularly the nerves ; some again consider that as the cause of the disorder, which many are inclined to represent as the

effect. Thus, different schools propagate different tenets relative to the origin of diseases; though ultimately, with respect to matters of fact, they must all necessarily agree.—Nor is this diversity of opinions in the least degree detrimental to the practical department of Medicine; provided that we do not regulate the mode of treatment altogether by hypothetical notions. Of what consequence is it to the patient, whether his physician imagines the nerves to be fine tubes, filled with a subtle fluid, or not?—whether he believes that catarrhs arise from noxious particles floating in the air, or from catching cold?—or whether he is prejudiced in favor of this or that particular theory of fevers?—It is a sufficient security to the patient, if his physician be thoroughly acquainted with the symptoms of the disease, and be able to distinguish them from those of any other malady. In this respect, the medical art is truly excellent, and without a rival; for the nature of diseases remains invariably the same. The accurate observations made by Hippocrates, two thousand years ago, on the progress and symptoms of diseases, recur to the medical practitioner of the present day, in a manner sufficiently regular and uniform.—And, in fact, how should it be otherwise; when nature always pursues the same path, whether in a healthy or diseased state of the body?

Here again it will be asked, whence does it happen that two physicians seldom agree in opinion, with regard to the case of the

same patient ? This question may be briefly answered, by claiming the same right for the medical profession, which is assumed by theologians in contested points of divinity ; by lawyers in arguing any part of their code, which is not perfectly plain ; and by philosophers who maintain different opinions on the same subject in Metaphysics ; for instance, that of *space* and *time*. But there are more forcible reasons which enable us, in some measure, to account for this diversity of opinions in Medicine. One of the physicians, perhaps, is in the habit of visiting fifty patients in a forenoon, so that he has not sufficient time to investigate minutely the nature and origin of the disease ; while another of less extensive practice is enabled to do more justice to his patients, by attending to their complaints with proper leisure and accuracy. One of them shall distinguish some of the leading symptoms, and without hesitation pronounce, that he has discovered the true seat of the malady ; but as many diseases of a different nature are attended with similar and common symptoms, there is no small danger of confounding the one with the other. Another shall enter the patient's room with a preconceived opinion on the subject of some prevailing epidemic, or with his head probably full of the case which occupied his attention in the last visit. With these impediments, how difficult will it be to institute a cool and unbiassed inquiry ? If, again, both should happen to be called in at different stages of the disorder, each of them would pre-

scribe a different method of cure, and the judgment of him who was last consulted, would in all probability be the most correct. Or lastly, a physician may be sent for, who, having commenced his studies about the middle of this century, has not (from want of time or inclination) sufficiently attended to the more recent discoveries of this inquisitive age; how can it then be expected, that he should agree in opinion with those, whose knowledge has been improved by the numberless new facts and observations lately made in physics, particularly in Chemistry?

### *Origin and Causes of Disease.*

Man is subject to the same destructive agents from without, by which the lower animals are affected; but there is no doubt, that he is more easily and frequently exposed to diseases than these. *First*, The inferior creatures are unquestionably provided with a more active instinct, by which nature teaches them, from their very birth, to avoid every thing that may prove hurtful, and to choose whatever may have a salutary influence on their mode of living. Few traces of this beneficial instinct can be discovered in the human race. Our own experience, or the instructions of others, which are likewise founded upon experience, must gradually teach us the wholesome or pernicious qualities of the objects of the material world.—

Reason, indeed, that peculiar faculty of man, indemnifies him, in a great measure, for the want of this instinct; it directs his choice in pursuing what is useful, and in avoiding what is injurious. Yet, at the same time, the want of instinct in man, is the source of many sufferings in the earlier years of his life.— He is born without covering, to withstand the effects of climate; without arms, to defend himself in his helpless state, and without instinct, if we except that of sucking. He remains much longer incapable of providing for his self preservation, and stands in need of the assistance of his parents for a much greater number of years, than any other animal with which we are acquainted. Although his parents, in general, acquit themselves of this charge with much greater solicitude and tenderness than the lower animals, yet our imperfect instinct is productive of much mischief to children, from ignorance and ill directed tenderness in parents and nurses. Children are frequently furnished with articles of food and dress which, at a more advanced age, nourish the seeds of disease and dissolution. Thus, many infants are indebted for their obstructions in the mesentery, and the consumptive habit attending them, to their uninformed and over anxious parents or friends, who commit daily errors with regard to the quantity and quality of the aliment, which in many instances they so liberally administer to the objects of their care; even though it be of an indigestible nature.

In the *second* place, it is a fact universally admitted, that mankind, especially in large and populous towns, have much degenerated in bodily strength, energy of mind, and in their capacity of resisting the noxious agency of powers which affect them from without.

The progressive cultivation of the mind, together with the daily refinements of habits and manners, are ever accompanied with a proportionate increase of luxury. But as this change, from a robust to a more relaxed state of life, has produced no difference in the *causes* generating disease, to which we are even more subject than formerly, we must necessarily suffer by the concomitant *effects*. For though luxury has assisted us in preventing the temporary effects of external agents, such as cold, heat, rain, &c. and we can occasionally guard ourselves against their severity, we are, upon the next return of them, attacked with much greater violence, than if we had been more habituated to their influence. And this state of things has imperceptibly introduced the use of many articles, both of dress and aliment, which in their consequences often prove detrimental to health. Hence we find, that in proportion as the refinements of luxury increase in a nation, the number and variety of diseases also increase. On the contrary, the more uncivilized a people continue, and the more their habits and customs approximate to a state of nature, the less are they affected by the causes of disease.

In the *third* place, we observe among the human race a greater number of prevailing passions, and man is more violently, and, for the time of their duration, more obstinately governed by them, than any other living creature. These emotions variously affect the human body. But the most noxious and oppressive than any other of all the passions, are *terror* and *grief*: The former of which is sometimes so violent as to threaten immediate destruction. Controlled by their powerful influence, and hurried away by the impulse of the moment, the mind is rendered incapable of judging, and of properly selecting the means of allaying those passions.—Hence the remedies, to which we have recourse during the prevalence of passion, and which then appear to us the most proper, frequently lay the foundation of innumerable disorders, both of body and mind.

A *fourth* source of diseases among mankind, are various specific contagions; and perhaps the greater number of these originate in the atmosphere which surrounds us. This is highly probable, at least with respect to marshy exhalations, and the effluvia of regions rendered unwholesome by different manufacturing processes. Another class of contagious miasmata consists of those which cannot be traced to any certain origin: Indeed, we daily observe their migrations; we perceive them moving from one individual to another, without fixing any stationary residence: Yet they have hitherto frustrated every attempt made towards their extirpation.

Of this unfettled nature are, the small pox, the measles, the hooping cough, the influenza, and many other epidemics. The first of them, namely the small pox, has of late years been very successfully treated; and it is well known that some of the most ingenious practitioners in Italy and Germany are, at this moment, employed in a serious attempt, wholly to extirpate this contagion from the Continent of Europe; an object which has formerly been accomplished in the cases of the plague and leprosy.\*

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\* The means employed by our ancestors, in subduing the virulence of these malignant disorders, consisted chiefly in separating every infected person from the healthy, and preventing all intercourse between them. For this purpose, many thousand houses of reception were then established and supported at the public expense, in every country of Europe; the diseased were instantly and carefully removed to those houses, and not permitted to leave them until perfectly cured. A measure somewhat similar to this has lately been proposed, and laid before the Plenipotentiaries of the Continental Powers assembled at Rastadt, by Professor Junker, Dr. Fault, and other German Physicians. This proposal, however, differs essentially from the former method of extirpating contagious disorders: as, according to the modern plan, we understand every individual, whether willing or not, must submit to be inoculated for the small-pox.

To deprive this loathsome disease of its destructive power, another method, perhaps more plausible and less compulsory, has been lately attempted in this country, and strongly recommended by Drs. Jenner, Pearson, Woodville, and other practitioners. I allude to the inoculation for the *cow-pox*. It is sincerely to be wished, that their humane efforts may be crowned with success; and if it be true that persons inoculated for the cow-

*On the Doctrine of Temperaments.*

Since it is established by numberless facts, that the temperaments, as well as the diseases, of whole nations, are in a great measure influenced by their ordinary articles of food, it will no longer be doubted, that the most important consequences result from our aliment, whether of food or drink.

As the *doctrine of temperaments* is in itself highly curious and interesting, I think this a proper place for introducing some practical remarks, tending to illustrate that subject, and presenting a concise view of it, chiefly derived from the learned annotations of the celebrated Professor Sommering of Mayence.

“The doctrine of temperaments,” says he, “in the general acceptation of that term, must be allowed to have greatly misled the ancient physicians, and particularly those who lived before the time of *Galen*. We are not, however, to infer from this, that

pox are *for ever* exempt from the infection of the *small-pox*, and that this artificial translation of morbid matter from the brute to the human subject is not attended with danger, it is of little consequence whether the cow-pox originate from any cutaneous disease of the milker, or from the grease of horses. For my part, I am not very sanguine in my expectations, which have often been disappointed on similar occasions; and until I can persuade myself of the perfect analogy subsisting between the two diseases, nay of their homogeneous nature, I shall patiently wait for a greater number of facts tending to confirm the truth of the hypothesis. This, however, in my opinion, can be decided only, when the *small-pox* should appear as the *prevailing epidemic*.

the doctrine itself is without foundation.— They erred not, by admitting the existence of temperaments ; for that seems now to be fully established ; but by too great a fondness for *generalization* ; by limiting the number of them to *four*, and fixing their attention in this division simply on the nature and composition of the blood, instead of regarding the whole animal economy. Thus, for instance, they know many parts of the human body scarcely by their names, and were little, if at all, acquainted with the great influence of the nerves ; while our modern physicians pay an almost extravagant homage to these fashionable co-operators in diseases, and frequently forget, in their attention to their favorites, the more important, at least more obvious, parts of the fluids.

“ There is a certain line observable in all the more perfect animals, by which nature is regulated in performing the functions of body and mind ; in preserving or impairing the health, and in exerting all those energies of life, on which the happiness of the creature depends. This line is various in different individuals, and the variety cannot be completely explained on the principle of the ancients, by a difference in the qualities of the blood alone ; though a human body of moderate size contains not less than thirty pounds weight of that fluid. Other terms must therefore be substituted for their *sanguine*, *choleric*, *phlegmatic*, and *melancholy* temperaments ; but before we attempt them, it will be necessary to take a more extensive view of the economy of man.

“The causes of the difference of temperaments are various: *First*; a difference in the nervous system, with respect to the number of the nervous fibres, their strength, and sensibility. A large brain, coarse and strong nerves, and great general sensibility, have always been found to be the marks of a *choleric* or *cholerico-sanguine* disposition. Hence proceeds the quickness of perception and capacity of knowledge in persons of this class, accompanied with great acuteness and strength of judgment, from the multitude of their ideas of comparison. These qualities are, however, in some measure counterbalanced by a violent propensity to anger, and impatience under slight sufferings of body or mind. Medicines ought, therefore, to be cautiously administered to them, and in small quantities only. A diminutive brain and very delicate nerves have generally been observed to be connected with dull senses, and a phlegmatic languor—sometimes with a taint of melancholy. To affect the organs of such persons, the impression of external objects must be strong and permanent. Their judgments are often childish from the want of ideas, and hence they are seldom able to make great progress in science. They are, however, more fit to endure labor, and the injuries of climate; consequently their medicines should be strong, and administered in large quantities.

“*Secondly*: Difference of irritability is another cause of difference of temperament. When the fibres are excited by the slightest

stimulus to quick and permanent contraction, we may justly infer the existence of a choleric disposition; while a phlegmatic temper displays itself by opposite symptoms; the muscles being slowly contracted, and excited with difficulty by the most powerful stimulus.

“*Thirdly*: The fibres and membranes of a phlegmatic person are remarkably soft to the touch; those of a melancholic person hard and dry, with greater tone and facility of contraction.

“*Fourthly*: There appears to be sufficient reason for the opinion, that an *electric* principle is dispersed through the atmosphere, which is communicated to the body, in different degrees, by respiration; which supplies the fibres with their natural tone; gives a more lively motion to the vessels; and increases the serenity of the mind. This principle does not exist in the atmosphere in equal quantities in all countries, nor even in the same country at different seasons or hours of the day. Thus, during the influence of the *Sirocco* in *Sicily*, all the fibres are oppressed by languor; but when the air becomes more serene and elastic, the natural energy of body and mind returns. All men do not inspire this electric matter in equal quantities, and thus a remarkable difference of temperament is produced.

“*Fifthly*: To these causes must be added the different nature and quantity of the blood. Thus, when the blood is highly stimulant, the heart is excited to more vio-

lent action; an increased secretion of bile promotes the vermicular motion, and a superfluity of mucus disposes to catarrh, &c. From these considerations it is evident, that there are causes sufficiently powerful to produce, at a very early period of life, an unalterable predisposition to a certain temperament. That a complete change is ever effected, from a choleric habit, for instance, to a phlegmatic, cannot be consistently admitted, at least while the laws of nature remain unalterable. I will, however, admit that the temperaments, though not completely changed, may be modified;—that the vehemence of some, and the languor of others, may to a certain degree be lessened; but this must be done by remedies suited to the class of the causes productive of a particular temperament. Of these the principal are :

“ 1. A different regimen. Thus animal food imparts the highest degree of strength to the organs, enlivens the senses, and often occasions a degree of ferocity; as is evident in cannibals, in carnivorous animals in general, in butchers and their dogs, in hunters, particularly when aided by the frequent use of spices, wines, and stimulating medicines. Vegetable diet, on the contrary, diminishes the irritability and sensibility of the system; in a word, renders it phlegmatic.—Some authors indeed have considered potatoes as being the means of contributing to that end; but I am not inclined to subscribe to this doctrine; since I have had occasion to ob-

serve the lively temperament of the common people in Ireland.—Yet attention to this is highly necessary in those, who have the charge of children ; as by the use of animal food, additional energy may be given to the fibres, and when their irritability is too great, it may be diminished by an opposite regimen.

“ 2. Education, both physical and moral, is another cause of alteration in the temperament of man. Its power is almost unbounded, especially in the more early periods of life ; and hence it often happens, that whole nations seem to possess one common temperament.

“ 3. Climate, in its most extensive sense, comprehending atmosphere and soil, is a third cause of alteration. The activity and acuteness of a choleric habit are seldom to be found in a region of perpetual fog ; as for instance, in Holland. They are the natural produce of a warm climate, and require a gentle elevation of surface, with a moderately moist soil, and a serene, equal atmosphere.

“ 4. I have often observed an astonishing degree of activity communicated to the whole system, by an ardent desire of learning ; so that the temperament seemed to receive new life from every accession of knowledge.

“ 5. The want of the necessaries of life, on the one hand, or possession of the means of luxury on the other, variously modify the disposition ;—and the liveliness of the temperament is also observed to rise or fall, according to the degree of political freedom.

“6. Age, company, and professional duties greatly affect the temperament. Hence we seldom find any one who, at 56 years of age, retains the activity of that choleric or sanguine habit which he possessed at 36.

“Those who follow nature, and not a plausible hypothesis, will be sensible how difficult it is to classify and fix the characteristic marks of the different temperaments; and it is rather a matter of doubt, whether the following rude sketch will be more successful than the attempts of others.

“All the modifications of temperaments appear to be varieties of the *sanguine* and *phlegmatic*.

“1. The sanguine is variable. It is marked by a lively complexion; the vessels are full of blood; and persons of this habit are seldom able to bear great warmth; they are predisposed to inflammations, and possess a high degree of irritability and sensibility. All is voluptuous in this temperament. They are fickle in every thing they undertake; are affable, and soon become acquainted, but as soon forget their friends, and are suspicious of every body. Whatever requires industry they abhor, and hence make little progress in science, until they advance in age.

“2. The sanguineo-choleric enjoys all the health and serenity of the sanguine, with all the perseverance of the choleric.

“3. In the choleric, the body is soft and flexible, without being dry and meagre as in the melancholic; the skin has a teint of yel-

low; the hair is red; the eyes dark and moderately large, with a penetrating expression, and frequently a degree of wildness; the pulse full and quick; the muscular contractions in walking, speaking, &c. are rapid; the bile is copious and acrid, and hence the vermicular motion is active, and the body not liable to costiveness. Persons of this class are particularly fond of animal food. They possess great magnanimity, are fitted for laborious undertakings, and seem born to command.

“ 4. He whose temperament is hypochondriacal, is a burthen to himself and others. Persons of this class are subject to diseases of the liver, and hence have a fallow complexion. They are never content with their situation, and are a prey to envy and suspicion.

“ 5. The melancholic temperament is marked by a gloomy countenance, small, hollow, blinking eyes, black hair, a rigid or tough skin, dry and meagre fibres. The pulse is weak and languid, the bile black, the vermicular motion slow. The perceptions of persons of this disposition are quick; they are fond of contemplation, and are slow in the execution of labor, which they patiently undertake. They bear with resolution the troubles of life; and, though not easily provoked, are nevertheless vindictive.

“ 6. The *Bæotic* or rustic temperament has many of the qualities of the sanguine, in common with many of those of the phlegmatic. The body is brawny, the muscles

have but little irritability, the nerves are dull, the manners rude, and the powers of apprehension weak.

“ 7. The gentle temperament is a combination of the sanguine, choleric, and phlegmatic. Universal benevolence is the distinguishing character of this class. Their manners are soft and unruffled. They hate talkativeness; and if they apply to science, their progress is great, as they are persevering and contemplative. Lastly,

“ 8. The phlegmatic class is marked by a soft, white skin, prominent eyes, a weak pulse, and languid gait. They speak slowly, are little hurt by the injuries of the weather, submit to oppression, and seem born to obey. From their little irritability, they are not easily provoked, and soon return to their natural state of indifference and apathy.”

#### *On Patent or Quack Medicines.*

Although there is but one state of perfect health, yet the deviation from it, and the genera and species of diseases, are almost infinite. It will hence, without difficulty, be understood, that in the classes of medical remedies there must likewise be a great variety, and that some of them are even of opposite tendencies. Such are both the warm and the cold bath, considered as medical remedies. Though opposite to each other in their sensible effects, each of them manifests its medical virtue, yet only in such a

state of the body as will admit of using it with advantage.

It is evident from these premises, that an universal remedy, or one that possesses healing powers for the cure of *all* diseases, is in fact a nonentity, the existence of which is physically impossible, as the mere idea of it involves a direct contradiction. How, for instance, can it be conceived, that the same remedy should be capable of restoring the tone of the fibres, when they are relaxed, and also have the power of relaxing them when they are too rigid; that it should coagulate the fluids when in a state of resolution, and again attenuate them when they are too viscid; that it should moderate the nerves in a state of preternatural sensibility, and likewise restore to them their proper degree of irritability, when they are in a contrary state.

Indeed, the belief in an universal remedy appears to lose ground every day, even among the vulgar, and has been long exploded in those classes of society, which are not influenced by prejudice, or tinctured with fanaticism. It is, however, sincerely to be regretted, that we are still inundated with a flood of advertisements in almost every newspaper; that the lower and less enlightened classes of the community are still imposed upon by a set of privileged impostors, who frequently puzzle the intelligent reader to decide, whether the boldness or the industry with which they endeavor to establish the reputation of their respective

poisons, be the most permanent feature in their character.\*—It was justly observed by the sagacious and comprehensive Bacon, “that a reflecting physician is not directed

\* To illustrate this proposition farther, I shall quote the sensible remarks of a late writer, Mr. James Parkinson, who expresses himself, in his “*Medical Admonitions*,” when treating on the subject of Catarrh, in the following pertinent words :

“Most of the Nostrums advertised as *cough drops*, &c. are preparations of opium, similar to the paragogic elixir of the shops, but disguised and rendered more deleterious, by the addition of romantic and heating gums. The injury which may be occasioned by the indiscriminate employment of such medicines, in this disease, may be very considerable ; as is well known by every person possessing even the smallest share of medical knowledge.

“It would undoubtedly be rendering a great benefit to society, if some medical man were to convince the ignorant of the pernicious consequences of their reliance on advertised Nostrums : but, unfortunately, the situation in which medical men stand is such, that their best intentioned and most disinterested exertion for this purpose would not only be but little regarded, but frequently would be even imputed to base and invidious motives. Those to whom they have to address their admonitions are unhappily those on whom reason has least influence. “Prithee, Doctor,” said an old acquaintance to a celebrated empiric, who was standing at his door, “how is it that you, whose origin I so well know, should have been able to obtain more patients than almost all the regular-bred physicians?—“Pray,” says the Quack, “how many persons may have passed us whilst you put your question?”—“About twenty.”—“And, pray, how many of those do you suppose possessed a competent share of common sense?”—“Perhaps one out of twenty.”—“Just so,” says the Doctor ; “and that one applies to the regular physician, whilst I and my brethren pick up the other nineteen.”—p. 327 and 328.

by the opinion which the multitude entertain of a favourite remedy ; but that he must be guided by a sound judgment ; and consequently he is led to make very important distinctions between those things, which only by their name pass for medical remedies, and others which in reality possess healing powers.”

I am induced to avail myself of this quotation, as it indirectly censures the conduct of *certain* medical practitioners, who do not scruple to recommend what are vulgarly called Patent and other Quack medicines, *the composition of which is carefully concealed from the public.* Having acquired their ill-merited reputation by mere chance, and being supported by the most refined artifices, in order to delude the unwary, we are unable to come at the evidence of perhaps nine-tenths of those who have experienced their fatal effects, and who are now no longer in a situation to complain.

The transition from *Panaceas*, or universal remedies, to *Nostrums* or *Specifics*, such, for instance, as pretend to cure the *same* disease in *every* patient, is easy and natural. With the latter also, impositions of a dangerous tendency are often practised. It will probably be asked here, how far they are practically admissible, and in what cases they are wholly unavailing. It is not very difficult to answer this question. In those diseases, which in every instance depend upon the same cause, as in agues, the small-pox, measles, and many other contagious distempers, the possibility of

specifics, in a limited sense, may be rationally, though *hypothetically*, admitted. But in other maladies, the causes of which depend upon a variety of concurrent circumstances, and the cure of which, in different individuals, frequently requires very opposite remedies, as in the Dropsy, the various species of Colic, the almost infinite variety of Consumptions, &c. &c. a specific remedy is an impudent burlesque upon the common sense of mankind. Those who are but imperfectly acquainted with the various causes from which the same disorder originates in different individuals, can never entertain such a vulgar and dangerous notion. They will easily perceive, how much depends upon ascertaining with precision the seat and cause of the affection, before any medicine can be prescribed with advantage or safety:—even life and death, I am concerned to say, are too often decided by the *first steps* of him, who offers or intrudes his advice upon a suffering friend.

The following instances will shew the danger attending the precipitate application of the same medicine in similar disorders.—A person violently troubled with the colic took a glass of juniper spirits, commonly called Hollands, from which he received almost instantaneous relief, as the affection proceeded from flatulency. Another person, who found himself attacked with similar pains, was induced by the example of his friend to try the same expedient; he took it without hesitation, and died in a few hours after.—No wonder that the consequences here were fatal,

as the colic in the latter case was owing to an inflammation in the intestines.—A third person was afflicted with a colic, arising from poisonous mushrooms, which he had inadvertently swallowed; the immediate administration of an emetic, and after it, some diluted vegetable acid, restored him to health. A fourth person had an attack of this malady from an *encysted hernia* or inward rupture. The emetic, which relieved the former patient, necessarily proved fatal to the latter; for it burst the bag of inclosed matter, poured the contents within the cavities of the abdomen, and thus speedily terminated his existence. Again, another had by mistake made use of arsenic, which occasioned violent pains, not unlike those of a common colic. A large quantity of sweet oil taken internally was the means of his preservation; whereas the remedies employed in the other cases would have been totally ineffectual. Here I willingly close a narrative, the recital of which cannot but excite the most painful sensations. To lengthen the illustration would lead me too far beyond my prescribed limits: for cases of this nature happen so frequently, that it would be easy to extend the account of them, by a long catalogue of interesting but fatal accidents.

What is more natural than to place confidence in a remedy, which we have known to afford relief to others in the same kind of affection? The patient anxiously inquires after a person who has been afflicted with the same malady. He is eager to learn the remedy.

that has been used with success. His friend or neighbour imparts to him the wished-for intelligence. He is determined to give it a fair trial, and takes it with confidence. From what has been stated, it will not be difficult to conceive, that if his case does not exactly correspond with that of his friend, any *chance remedy* may be extremely dangerous, and even fatal.

The physician is obliged to employ all his sagacity, supported by his own experience, as well as by that of his predecessors; and, nevertheless, is often under the temporary necessity of discovering from the progress of the disease, what he could not derive from the minutest researches. How then can it be expected, that a novice in the art of healing should be more successful, when the whole of his method of cure is either the impulse of the moment, or the effect of his own credulity? It may be therefore truly said, that life and death are frequently intrusted to chance.\*

From what has been premised, it may be confidently asserted, that a nostrum or an universal remedy is as great a *desideratum* as

\* The late Dr. HUXHAM, a physician of great celebrity, in speaking of *Aesclepiades*, the Roman empiric, says: "This man from a *declaimer* turned *physician*, and set himself up to oppose all the physicians of his time; and the novelty of the thing bore him out, as it frequently doth the *Quacks* of the present time; and ever will, *whilst the majority of the world are fools.*"

In another place, Dr. Huxham thus curiously contrasts the too timid practice of some regular physicians, with the hazardous treatment, which is the leading feature of Quacks: "The timid, low, insipid practice of some, is almost as dangerous as the bold, unwarranted empiricism of others; time and opportunity, never to be regained, are often lost by the former; whilst the latter, by a *bold push*, sends you off the *stage* in a moment."

the philosopher's stone. The absurd idea of an universal medicine can only obtain credit with the weak, the credulous, or the ignorant.

One of the most unfortunate circumstances in the history of such medicines, is the insinuating and dangerous method, by which they are *puffed* into notice. And as we hear little of the baneful effects which they daily must produce, by being promiscuously applied, people attend only to the extraordinary instances, perhaps not one in fifty, where they have afforded a temporary or apparent relief. It is well known, that the more powerful a remedy is, the more permanent and dangerous must be its effects on the constitution; especially if it be introduced like many Patent-Medicines, by an almost indefinite increase of the doses.

There is another consideration, not apt to strike those who are unacquainted with the laws of animal economy.—When we intend to bring about any remarkable change in the system of an organized body, we are obliged to employ such means as may contribute to produce that change, without affecting too violently the *living powers*; or without extending their action to an improper length. Indeed, the patient may be gradually habituated to almost any stimulus, but at the expense of palsied organs, and a broken constitution.\*

\* An Italian Count, uncommonly fond of swallowing medicines, found at length that he could take no more. Previous to his death, he ordered the following inscription to be placed on his tomb:

“*I was once healthy; I wished to be better; I took medicine, and died.*”

Such are the melancholy effects of imposture and credulity! Were it possible to collect all the cases of sacrifices to this mysterious infatuation, it is probable that their number would exceed the enormous havoc made by gunpowder or the sword.

A popular writer, Dr. BUCHAN, makes the following just remark on the subject in question: "As matters stand at present," says he, "it is easier to cheat a man out of his life, than of a shilling, and almost impossible either to detect or punish the offender. Notwithstanding this, people still shut their eyes, and take every thing upon trust, that is administered by any pretender to Medicine, without daring to ask him a reason for any part of his conduct. Implicit faith, every where else the object of ridicule, is still sacred here."

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*Analysis of Fashionable Complaints.*

If these abuses of medicine be of consequence, how much more so are certain manners, habits, and customs, which the united efforts of the Faculty will never effectually remove or suppress, unless assisted by the female guardians of helpless infancy. That I may not be misunderstood with respect to the real intention of this address to the fair sex, I beg leave previously to observe, that the following remarks apply chiefly to certain classes of the community, among whom a due degree of attention is but rarely paid to the skin of their offspring.

The greater number of our fashionable complaints and affections are nearly related

to each other. The gout, formerly a regular but rare disease, which attacked only the external parts of persons advanced in years, has now become a constitutional indisposition, a juvenile complaint, torturing the patient in a thousand different forms. The famous *Podagra* and *Chiragra* of our ancestors are now nearly obsolete, and instead of the gout in the *feet* or *hands*, we hear every day of the nervous gout, the gout in the *head*, and even the fatal gout in the *stomach*. No rank, no age, no mode of life seems to be exempt from this fashionable enemy.—The next and still more general malady of the times, is *an extreme sensibility to every change of the atmosphere; or rather, a constantly sensible relation to its influence*. We are not only more subject to be affected with every current of air, every change of heat and cold, but the feelings of some are so exquisitely delicate, that in a close apartment, nay in bed, they can determine with accuracy the state of the weather, as well as the direction of the wind. By consulting their bodily sensations, these *living barometers* announce more correctly than the artificial ones, not only the present, but even the future changes of the weather. I could never have believed, that this additional sense, which is only of modern origin, could be so much improved, had I not frequently witnessed the sensations of certain patients, when a cloud is floating over their heads:—a talent so peculiar to our age, that it would undoubtedly excite surprize, but no envy, in our less refined forefathers. In a climate, where the weather

changes every day, and almost every hour, it may be easily imagined, how dependent, frail, and transitory, must be the health of the wretched possessors of this *new* sense; and that beings so organized cannot warrant, for a single hour, their state of health, their good-humour, or their physical existence. Is it not then very probable, that many strange and inconsistent events of our days may have their secret foundation in this dependence on the weather?—In judging of man and his actions, we ought first to observe the state of the barometer; as our more superstitious ancestors made the celestial constellations the criterion in their prognostics.

Not less characteristic of the present generation, but more painful, are the fashionable nervous and hypochondriacal diseases. These are formidable, insidious tormentors, which not only destroy our physical well-being, but also envenom our tranquillity and contentment, and cloud our fairest prospects of happiness. Without depriving us of life, they render it an insupportable burthen; without inducing death, they make him a welcome visitor.

It is unnecessary to detail the diversified shapes, in which these maladies present themselves. Let it suffice to observe, that however intimately the mind appears to be connected with these phenomena, we can nevertheless account for them from physical causes. They have rapidly increased with the propagation of the gout, and experience shews, that they frequently alternate with it, in the same in-

dividual patient. It is highly probable, therefore, that they are of a similar nature with the gout; and that they originate from the same source, which is peculiar to our age. Closely connected with the gout, and likewise with the hypochondriasis, how frequently do we observe the hæmorrhoids, formerly a disease of the aged, now the companion of youth, and almost a general complaint.

The last class of our fashionable diseases includes all those affections of the skin, which are known by the name of *eruptions, discolorations, efflorescences, scorbutic taints, &c.* Of late, these have alarmingly increased, and appear daily to spread every where, like noxious weeds. Even in the higher ranks, where neither a poor diet, nor want of attention to cleanliness, can be assigned as causes, we frequently observe persons, whose skin announces bad health, and on whom medicine can have no effect. Physicians of different countries complain of new and unheard-of cutaneous disorders, of an extremely malignant tendency; and if the spreading of them be not checked in time, Europe will perhaps once more be visited with that malignant and filthy disease, the Leprosy.

It is however not sufficient to give a bare catalogue of these singular affections. I shall, therefore, attempt to trace them to their source; to shew that they can be easily prevented; and to point out the most likely means by which so desirable an event may be accomplished.—It is to you, guardians of future, and I hope hardier races, that I now ap-

peal—it is your aid I solicit in so important a measure of national and domestic policy.

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*On the Nature and Functions of the Skin.*

Much as we hear and speak of *bathing*, and of the great attention at present paid to cleanliness, I am bold to affirm, that the greater number, if not the whole of our fashionable complaints, originate from the want of care and proper management of the *skin*. Through unpardonable neglect in the earlier part of life, especially at the age of adolescence, the surface of the body is so unnaturally enervated by constant relaxation, that it oppresses, and, as it were, confines our mental and bodily faculties; promotes the general disposition towards the complaints above alluded to; and, if not counteracted in time, must produce consequences still more alarming and deplorable.

We often hear people complain, that *their skin is uneasy*; a complaint, which I fear is but too prevalent among those, who give themselves little trouble to inquire into its origin.—But how is it possible, I hear many persons ask, that the skin, which is a mere covering of the body, to shelter it from rain and sunshine, can have such influence over the whole frame? I shall venture to explain this problem, and hope to impress such as are inclined to be sceptical, with more respect for that part of the human body.

The skin unites in itself three very essential functions. It is the organ of the most exten-

five and useful sense, that of *touch*; it is the channel of *perspiration*, the principal means, which Nature employs to purify our fluids; and through the most admirable organization, is enabled to *absorb* certain salutary parts of the surrounding atmosphere, and to guard us against the influence of others of an injurious tendency. For this purpose, innumerable nerves and vessels are dispersed throughout the skin, which are in the continual act of feeling, and at the same time of secreting and volatilizing noxious particles, and absorbing those containing vital principles. It has been proved by accurate calculations, that the most healthy individual daily and insensibly perspires upwards of three pounds weight of superfluous and hurtful humours. It may therefore be confidently asserted, that no part of the body is provided with so many and important organs, by which it is connected with almost every operation performed in animal life, as the skin. It is this, which places us in the most immediate connexion with the surrounding atmosphere, which through that channel particularly affects us, and exerts its influence on our health:—we further feel, directly through the skin, the qualities of the air, heat, cold, pressure, rarefaction, &c.: and hence we experience, at least in their influence, other much more subtle and less known qualities, of which I shall only mention the electric and magnetic fluids. From the spiritual and highly penetrating nature of these fluids, we may easily conjecture, how considerable a share they must have in the princi-

ple of vitality, and of what important use the organ is, through which they affect us.

Important as the skin is to external life, it is no less so to the internal economy of the body, where it appears to be peculiarly designed to preserve the great equilibrium of the different systems, by which the human frame is supported in its vital, animal, and sexual functions.—If any stagnation, accumulation, or irregularity arise in the fluids, the skin is the great and ever-ready conductor, through which the superfluous particles are separated, the noxious volatilized, and the fluids, stagnating in their course, set at liberty; a canal being at the same time opened for the removal of those humours which, if they should get access to the vital parts, such as the heart and the brain, would cause inevitable destruction. By the proper exercise of this organ, many diseases may be suppressed in their early stages; and those which have already taken place may be most effectually removed. No disease whatever can be removed without the co-operation of the skin. The nature and constitution of this organ most certainly determine either our hope or apprehension for the safety of the patient. In the most dangerous inflammatory fevers, when the prospect of recovery is very faint, a beneficial change of the skin is the only effort, by which Nature, almost overcome, relieves herself, and ejects the poison in a surprising manner, frequently in the course of one night. The greatest art of a physician, indeed, consists in the proper management of this extensive or-

gan, and in regulating its activity, where occasion requires. To mention only one circumstance; it is well known to those who have experienced the beneficial effects of a simple blister, that its stimulus, like a charm, has frequently relieved the most excruciating pains and spasms in the internal parts.

*Cleanliness, flexibility and activity* of the skin are, according to the observations premised, the principal requisites to the health of individuals, as well as of whole nations. But instead of contributing to its improvement, we generally pay very little attention to it, except to the skin of the face and hands, which are too often made the *fallacious* index of health. I am convinced, however, that most of the patients and valetudinarians, who take so much pains to refresh and fortify the *internal* parts of their body, by invigorating potations, rarely, if ever, pay any regard to their *external* surface;—an object of equal importance, and perhaps standing in much greater need of corroborants than the former. Hence it happens, that the skin of convalescents is observed to be particularly relaxed and obstructed; that they are liable to continual colds, upon the least change of temperature; and that every day of their recovery renders them more subject to relapses.

In this country, the children of people in the middling and lower ranks are perhaps better managed, than in most of the countries upon the Continent; because frequent and daily bathing is, to my certain knowledge, no where so generally practised as in England.

As soon, however, as children attain a certain age, this practice is again as generally neglected: after the tenth or twelfth year of age, the surface of the body is very little attended to. Thus a foundation is laid for numberless evils, and particularly for that scorbutic taint in the human system, which now almost universally prevails, and which is more or less connected with other and more fashionable complaints.—As we advance further in years, this disposition of the skin increases still more, particularly from the mode of life pursued in the higher ranks. We then begin to accustom ourselves to sedentary habits, to think, and to partake of the pleasures of life. The lady, the man of fortune, and the ill-fated man of letters, all of them require *more active* exercise, than they actually take, which alone can promote a free perspiration, and enliven the surface of the body; but, by their indolent habits, the whole machine stagnates, and the skin becomes contracted and debilitated.

The husbandman, indeed, labours diligently; and though, by the sweat of his brow, his skin preserves more life and activity, it is neither kept sufficiently clean, nor prevented from being obstructed by perspirable matter. The artist and manufacturer carry on their pursuits in a sedentary manner, and in a confined, impure air; the latter, in the duties of his occupation, generally employs unwholesome articles, so that at length he loses the use of this organ entirely, in some parts of the body. The voluptuary and the glutton do not suffer less than the former, as they impair the

energy of the skin by excesses of every kind, and take no precautions to preserve its elastic texture.—Our usual articles of dress, flannel excepted, are not calculated to promote a free perspiration;—our coal-fires, and still more the large potations of *warm* liquors, contribute greatly to relax the skin. If we add to this list of predisposing causes, our inconstant climate, which at one hour of the day braces, and at another relaxes the surface of the body, which alternately heats and cools it, and consequently disturbs its uniform action; it will be easily understood, that the skin must for these reasons be almost generally vitiated, and that it really is a leading source of many of our fashionable indispositions.

When the sensation of the surface is impaired; when the myriads of orifices, that are designed for the continual purification and renovation of our fluids, are obstructed, if not closed; when the subtle nervous texture is nearly deprived of its energy, so that it becomes an *impenetrable coat of mail*, is there any reason to wonder, that we are so often harassed by a sense of constraint and anxiety, and that this uneasiness, in many cases, terminates in a desponding gloom, and at length in complete melancholy?—Ask the hypochondriac, whether a certain degree of cold, paleness, and a spasmodic sensation in the skin, do not always precede his most violent fits of mental debility; and whether his feelings are not most comfortable, when the surface of his body is vigorous, warm, and perspires freely? In short, the degrees of insensible per-

piration are to him the safest barometer of his state of mind. If our skin be disorganized, the free inlets and outlets of the electric, magnetic, and other matters, which affect us at the change of the weather, are inactive. Thus the origin of extreme sensibility towards the various atmospheric revolutions, is no longer a mystery. For, in a healthy surface of the body, no inconvenience will follow from such changes.—If we further advert to those acrimonious fluids which, in an imperfect state of perspiration, are retained in our body, and which settle upon the most sensible nerves and membranes,—we shall better apprehend, how cramps or spasms, the torturing pains of the Gout and Rheumatism, and the great variety of cutaneous diseases, have of late become so obstinate and general.

The equilibrium of the fluids, and the circulation of the blood, are also determined in no small degree by the skin; so that if these fluids become thick and languid, the whole momentum of the blood is repelled towards the interior parts. Thus a continual plethora, or fulness of the blood, is occasioned; the head and breast are greatly oppressed; and the external parts, especially the lower extremities, feel chilly and lifeless.

In warm climates, in Italy for instance, the hæmorrhoids, a very distressing complaint, are but rarely met with, notwithstanding the luxurious and sensual mode of life of the inhabitants; because perspiration is always free and unchecked: while among us persons are found, who devote the whole of

their attention to the cure of that troublesome disorder.

May we not infer, from what I have thus advanced, that the use of baths is too much neglected, and ought to be universally introduced? It is not sufficient, for the great purposes here alluded to, that a few of the more wealthy families repair every season to watering-places, or that they even make use of other modes of bathing, either for their health or amusement. A very different method must be pursued, if we seriously wish to restore the vigour of a degenerated race. I mean here to inculcate the indispensable necessity for *domestic baths*, so well known among the ancients, and so universally established all over Europe, a few centuries ago, and which were eminently calculated to check the further progress of the leprosy;—a disease which, though slower in its effects, is not less distressing than the plague itself.

Much has been said and written upon the various methods, and the universal medicines, proposed in different ages, by different adventurers, professedly to diminish the inherent disposition to disease, and to give a new and renovating principle to the human frame. At one time they expected to find it in the philosophic and *astralian salts*, at another in Magnetism and Electricity;—some fanatics pretended to have discovered it in the light of the moon, others in celestial beds;—but, if I may venture to deliver my opinion, we may search for it most safely and conveniently

in every clear fountain—in the bosom of ever young, ever animating nature.

*Bathing* may be also considered as an excellent specific for alleviating both mental and bodily sufferings. It is not merely a cleanser of the skin, enlivening and rendering it more fit for performing its offices; but it also refreshes the mind, and spreads over the whole system a sensation of ease, activity, and pleasantness. It further removes stagnation in the larger as well as in the capillary vessels; it gives an uniform free circulation to the blood, and preserves that wonderful harmony in our interior organs, on the disposition of which our health and comfort so much depend. A person fatigued, or distressed in body and mind, will derive more refreshment from the luxury of a lukewarm bath, and may drown his inquietude in it more effectually, than by indulging in copious libations to Bacchus. The bath may be equally recommended as an admirable retiring place, to evade, for a time, the influence of the atmosphere; and persons that have the misfortune to be too susceptible of external impressions, would find no small benefit, were they to repair in thick and sultry weather to the bath, where they breathe in an element less loaded with noxious particles.

The wish to enjoy perpetual youth, is one of the most predominant and pardonable. Though it cannot be rationally asserted, that bathing will confer continual youth, yet I will hazard an opinion, that it has a very uncommon and superior tendency to prolong

that happy state; it preserves all the solid parts soft and pliable, and renders the joints of the body flexible. Hence it powerfully counteracts, what I presume to call an insidious disease, viz. *age*, which operates by gradually exhausting the humours, and depriving the constituent parts of the human frame of their elasticity. It is no less certain, that bathing is one of the most efficacious means of preserving beauty; and that those nations, among which bathing is a prevailing practice, are usually the most distinguished for elegance of form and beauty of complexion.

A moderate desire to improve and beautify the surface of the body, is far from being a frivolous pursuit. It excites as much interest, and is productive of as beneficial consequences, as the exertions of many a pseudo-philosopher, who devotes the toil of years, to arrange his notions in a certain systematic form, and who yet is not fortunate enough to attain the great object of his wish. I have had frequent opportunities to observe, that the desire of beauty, when not inordinate, may prove the source of many virtuous and laudable pursuits, and that it may be greatly instrumental to the preservation of health. I am also persuaded, that this desire is often pursued by methods not the most proper, and that from not having a just knowledge of beauty, we make many valuable sacrifices, not only of things relating to health, but sometimes of life itself. Instances are not uncommon, of young persons attempting to bleach their skins, and beautify their persons,

by avoiding a free air, using a mild and weakening diet, long fasting, long sleeping, warming their beds, &c. &c. ; but, alas ! the event does not answer their expectation,—they lose both health and bloom !—Eating chalk, drinking vinegar, wearing camphorated charms, and similar destructive means have been resorted to, by other more daring adventurers, but with no better success. Those I have last enumerated, may be called the *minor cosmetics* : others of a more formidable nature, I almost hesitate to mention, as they are unquestionably the most deleterious substances we are acquainted with. *Mercury* and *lead*, manufactured in various forms, are unhappily too common ingredients in many of our *modern cosmetics*, whether they consist of lotions, creams, powders, paints or ointments. That these substances can be communicated to the circulating fluids, through the skin as well as by the stomach, requires, I should suppose, no further proof, after the doctrines already advanced on this subject. *Lead*, in particular, if once introduced into the system, though in the smallest proportions, cannot be removed by art, and never fails to produce the most deplorable effects ; such as palsy, contraction and convulsion of the limbs, total lameness, weakness, and the most excruciating colic pains. Besides these more obvious effects, the frequent external use of lead and mercury, as cosmetics, occasions cramps in every part of the body, faintings, nervous weakness, catarrhs, tubercles in the lungs and intestines, which occur together or separately, according

to the different circumstances, till at length a consumption, either pulmonary or hectic, closes the dreadful scene.

Beauty of the skin, the subject under consideration at present, is but another term for a sound and healthy skin ;—a pure mirror of the harmony of the internal parts with their surface, or, if I may be allowed the expression, “ *it is visible health.*”

There subsists so intimate a relation between our interior and exterior vessels, that almost every error or irregularity in the organs within, shows itself first of all on the surface without, and particularly on the face.—How often are we struck at the countenance of a person, who thinks himself in perfect health, but whose illness, the result of some morbid cause concealed in the body, justifies in a few days the serious apprehensions we entertained at our last interview. Nature has wisely ordained, that the first appearance of internal irregularities is indicated by the countenance ; but to what use do we generally apply this index ?—We refuse to avail ourselves of her beneficent intimation ; and the continued use of pernicious substances, instead of promoting the object we have in view, ultimately tarnishes and impairs that beauty, which we meant to adorn and preserve. We imagine it in our power to improve the skin, without attending to the purity of the fluids, although it is indebted to them for its very existence ; and yet should smile at a person, who attempted to cleanse an impure tongue, by constantly scraping it, when a disordered stomach was the real cause of that impurity.

From the tenor of the preceding positions, I hope for indulgence, when I venture to pronounce every cosmetic, whose composition is kept a secret from the public, false and fraudulent ware. The three great and really effectual *SUBSTITUTES FOR COSMETICS*,\* which I would recommend, are the following: *First*; due attention to *insensible perspiration*;—an important process, by which nature, if duly assisted, will not fail to expel all acrimonious or useless particles. By this, too, the surface of the body will be kept in a constant atmosphere of softening exhalations,—a species of volatile vapor-bath, and the most efficacious means of preserving it soft and pliant, and of animating it with the colour of life. The next circumstance to be attended to, is the *purity of the fluids*; this depends equally on a free *perspiration*, and on a vigorous state of *digestion*. The third requisite to a fair, healthy complexion, is an *uniform* distribution of the fluids; or in other words, *a free and un-*

\* To such readers, whether male or female, as are *determined* to make use of *cosmetics*, instead of attending to the more effectual means to preserve the bloom of the skin, it may be of service to point out one or two *external applications*, in order to prevent them from resorting to the dangerous and destructive contrivances of Quacks.—According to Dr. WITHERING, a physician of great eminence at Birmingham, an infusion of horse-radish in milk makes one of the safest and best cosmetics. Another preparation for clearing the skin of pimples and *recent eruptions*, if assisted by gentle aperient medicines, is the fresh expressed juice of house-leek, mixed with an equal quantity of sweet milk or cream.—Yet all contrivances whatever, to answer this purpose, are absurd and nugatory, if the *inward* state of the body be neglected, or if they be looked upon as *specifics of themselves*. Such things do *not* exist in nature; and we might as well try to bleach the face of a Negro, as to remove any scorbutic or other eruptions from the face, without bestowing proper attention on the whole state of the body, and particularly the fluids, from which these irregularities derive their origin.

*restrained circulation of the blood*; as the very purest fluids, when profusely propelled to the face, are productive of disagreeable consequences, such as unnatural redness, flushings, tumid appearances, &c. of which ladies of a sedentary life are so apt to complain.

To these three general observations, I think, it may be necessary to subjoin a few particular injunctions, relative to the improvement of the skin, as connected with a state of good health.—Carefully avoid all *immoderate* and *violent dancing*, as the sudden alternations of heat and cold, not only impair the general state of the skin, but are likewise of the greatest detriment to beauty.—Abstain from the too frequent and too copious use of heating liquors of every kind, particularly punch and strong wines. There is scarcely any thing which is, in my opinion, more destructive of the bloom of youth and manhood, than this *liquid fire*, which fills the blood with inflammable particles, propels them towards the face, parches the skin, renders it spotted, and lays the foundation of that incurable disease, which is sometimes figuratively called *copper in the face*. Neither sugar, nor any additional ingredient to gratify the palate, can deprive these liquors of their noxious qualities, so that even the most agreeable of these seductive potions is attended with considerable danger.

Avoid, likewise, every excess in *hot drinks*, as coffee, chocolate, and tea, particularly the last, in which the people of this country are given to indulge, more than in any other beverage. I scarcely dare venture to impeach

this favourite *solace* of our morning and evening hours; but with all due deference to the comforts of the domestic circle, I consider it as my duty to denounce the too liberal use of this liquor, as not a little prejudicial to the fairness and purity of the skin. Tea taken hot, and in immoderate quantities, not only has a tendency to weaken the organs of digestion, but causes fluctuations and congestions in the humours of the face, and frequently brings on a degree of debilitating perspiration. Let us conceive the stomach inundated with a portion of warm water, just at the time of digestion; its concoctive powers are literally drowned, at the very instant when their assistance is most required; and, instead of a pure balsamic *chyle*, or alimentary fluid, it prepares crude, and acrimonious humours, which can only generate an unhealthy mass of blood. Here, I cannot impress upon the attentive reader, in terms sufficiently strong, the following truth: *that a healthy stomach only can produce healthy and uncontaminated fluids*; and that two thirds of what we call acrimony, or sharpness of humours in the system, proceed from a languid stomach, and irregular digestion.—If therefore the tea be made too weak, it will operate merely as warm water, and like it will greatly relax the coat and membranes of the stomach;—if made too strong, it will give an unnatural heat to the body, prove a dangerous stimulus to the nerves, occasion palpitations of the heart, universal trembling, cramps, and a number of other complaints, which it is needless to enumerate. That these

effects do not take place, during the first months or years of indulging ourselves in the intemperate use of hot and strong tea, is no argument to controvert this position; they will, either sooner or later, unavoidably follow.

I shall but slightly touch here, on another subject, scarcely of less importance than the former; namely, the various articles prepared by the pastry-cook and confectioner. These dainties would be less objectionable, if any method could be devised of baking them without the pernicious ingredients of yeast and fat, substances which load the stomach with a glutinous slime and rancid matter, which obstruct the glands of the abdomen, particularly those of the mesentery, and which have a strong tendency to produce the cutaneous diseases before mentioned.

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### *On the Physical Education of Children.*

THE physical education \* of infants unquestionably forms an object of the first importance. The great disproportion subsisting between healthy and diseased children, together with the deplorable mortality which occurs among the latter, too plainly evince, that their *bodily* welfare is not sufficiently attended to.

There is little room to doubt, that by a more rational mode of nurture, during the

\* To some readers it may be necessary to explain, that by *physical education* is meant the bodily treatment of children; the term *physical* being applied in opposition to *moral*.

first years of infancy, many subsequent diseases might either be wholly prevented, or at least greatly mitigated. Nothing perhaps would contribute more to meliorate education in general, than, what has been long and much wanted, a serious and minute attention of the Faculty to this particular branch of medical study: which at present, I am concerned to say, is almost totally neglected.

The few books extant on this subject are neither written on scientific principles, nor calculated, by their manner and style, to afford plain and popular instruction. It is not enough for professional men to plan systems of education in their study-rooms;—let them also demonstrate in practice, that they are familiarly acquainted with the *true* method of educating children;—a method which, in my opinion, implies somewhat more than merely prescribing and administering medicines.

So long as the nursing of children remains exclusively in the hands of common midwives and nurses, it is rather a matter of surprise, that so many infants should survive the age of childhood.—We ought therefore, above all things, to inquire into the monstrous prejudices prevailing in this essential part of domestic management, as the first step towards their extirpation.

How great would be my satisfaction, if, by the following strictures, I should be able to prevail upon some intelligent mothers, who possess sufficient fortitude, to throw off the bondage of old customs, or modern fashions,

and to return to the path of simple nature!— In a system of practical education, it is a judicious precept, which cannot be too much inculcated, *to omit rather than to undertake, or be too officious, in the physical treatment of infants.*

From the difficulty of discovering the true cause and seat of the complaints of children, especially if accompanied with any particular symptoms in the excretory vessels, it is very usual to administer a *gentle laxative* or *emetic*, upon the slightest occasion.—It would lead me too far to examine, in detail, the many bad consequences resulting from so absurd and detrimental a practice. I cannot, however, forbear from remarking, that by dealing constantly in aperient medicines (a strange infatuation among the vulgar!) the future diseases of the child assume a particular character of the *gastric* kind—the juice of the stomach, which serves to concoct our food, being vitiated. As the operation of the laxatives is in a manner mechanical, by impelling the fluids, and particularly those of the mucous kind, towards the stomach and bowels, and causing them to accumulate in a greater degree than usual, it will be easily understood, that by the frequent repetition of this stimulus, the gastric juice will be rendered unfit to effect the proper solution of food in the stomach. For the same reason, persons subject to frequent costiveness soon begin to complain of indigestion, when they once habituate themselves to take ANDERSON'S or any other aperient pills: for by them the stomach is converted, as it were, into a field of battle, where all the ir-

regularities, that take place in the system, are left to fight their way; where the limits of disease and health, nay the alternative of life and death, are to be finally determined. That this however is not the most proper place for such a contest, requires no demonstration. The stomach is appointed by nature for very different purposes; it is the only organ of nourishment and digestion; the source of restoration and health. But how can it effectually answer this end, if it serves, at the same time, as the constant laboratory of diseases? As it is always in a state of impurity, it cannot act with uniform energy and a sufficient degree of elasticity, to prevent frequent irregularities in digestion;—hence arise bad humours, hypochondriac affections, and nervous debility; all of which, I have reason to fear, are, more or less, consequences of tampering with medicines, especially in the period of childhood. I am further induced to think, though it may to some appear rather a bold idea, that more children are destroyed by the absurd practice of loading their tender stomachs with every sort of trash, and afterwards relieving them by repeated doses of physic, than by any *natural* process. This likewise accounts for the great number of children who die *in towns*, at an early age, before they become inured to such severe attacks made on their digestive organs.

In order to check, and, if possible, to prevent, this general tendency to diseases; to meliorate the constitution of children, by producing a regular circulation of the fluids;

and to direct the exuding morbid matter more universally and uniformly through the pores of the skin, a more effectual remedy cannot be suggested, than that of *frequent bathing*, and a very limited use of aperient medicines.

These observations are not conjectural, but founded on experience, and it gives me pleasure to add, that they are confirmed by many physicians of eminent abilities, and extensive practice.

Frequent bathing in infancy is a powerful mean of counteracting and suppressing the disposition to stomachic and bilious complaints, which, in our days, are uncommonly prevalent among children and adults, and which are frequently accompanied with diversified nervous symptoms. By the efforts of nature, to throw off malignant humours by the surface of the body, in consequence of a proper use of the bath, many infantile diseases may be safely prevented, catarrhs suppressed, or greatly mitigated, teething rendered easy, and the whole physical condition of the child considerably improved.

It becomes here a question, which is the most proper degree of heat in using the bath for children.—I shall venture to pronounce, upon the authority of the best modern authors, confirmed by my own experience and observation, that the *lukewarm bath*, between 84 and 96° of Fahrenheit's thermometer, rather more than new-milk warm, is, upon an average, the most suitable temperature. An erroneous notion too much prevails, that the

good effects of bathing are principally to be ascribed to the *cold bath*. The use of any bath, indeed, whether cold or warm, that is, the stimulating impression excited by the water, is, of itself, an excellent tonic, serving to brace and invigorate the whole system. Not to mention the comfortable sensations, that must necessarily attend the cleansing and opening so many millions of pores, with which the skin is provided, it is farther remarkable, that water, formerly considered as a *simple* element, is now pretty generally understood to be a *compound* body, consisting of *oxygen* and *hydrogen*, or vital and inflammable air, the former of which, it is well known, promotes the process of *respiration*, and literally feeds the vital principle in the human body. Although this assertion rests chiefly on an hypothetical foundation, so much is certain, that a lukewarm bath, used for the legs alone, is found by experience to communicate new spirits to the weary traveller, almost instantly to remove the sense of languor, and to re-animate all his faculties. *Bruce*, the Abyssinian traveller, remarks, that in the intense heat of that country, a lukewarm bath afforded him more refreshment and vigour, than a cold one. We ought farther to consider, that infants are accustomed scarcely to any other than a *warm* temperature. The cold bath belongs to the class of *heroic remedies*, and in its sudden and vehement effects nearly resembles electricity. It is moreover an axiom in medicine, that the means of stimulating and corroborating the system,

should be in proportion to the degree of vital power in the individual; that a faint spark may be extinguished rather than kindled by too violent a concussion of air; and that a degree of stimulus and invigoration, which agrees with a firm and robust body, may prove destructive to one that is weak and tender. It might therefore be extremely hazardous to employ a remedy, in the delicate frame of infants, which even adults should not resort to without the greatest precaution. I presume to go a step farther, and do not hesitate to say, that the use of the cold bath, as far as relates to the treatment of children, is EVEN DANGEROUS. Its principal mode of operation is by contracting the whole surface of the body, and by causing a general repulsion of the fluids towards the internal parts. Hence in a young and infirm body, which has very little internal *reaction*, the necessary consequence of cold bathing will be an unequal distribution of the fluids, a partial or local stagnation of them; and, what is worst of all, an accumulation of humours in the head, by which infants are frequently injured, before it is in their power to complain.—The lukewarm bath, on the contrary, produces an uniform revolution and salutary purification of all the fluids. For these reasons, I consider the tepid bath as in every respect preferable, since it may be used somewhat cooler for strong children, or warmer for those of a weakly constitution, and the requisite degrees of heat be regulated according to the increasing age and strength of the child. In summer, the water

intended for bathing ought to be exposed the whole day to the rays of the sun, which will impart to it an agreeable and congenial warmth. Rain, or river-water, is the most proper for this purpose; but if there be a necessity for using spring or well-water, it should be previously softened with a small quantity of boiled water, in which a quarter of an ounce of soap has been dissolved, with the addition of a little bran or oatmeal; or if milk can be had, it will be found a still more useful ingredient. Here I would particularly recommend not to boil the *whole* quantity of the water to be used for bathing; as it would in that case be deprived of its aërial constituents, which are not without their importance in the bath.—During the first weeks and months, the child should not be suffered to remain in the bath longer than five minutes, which time may be gradually increased to a quarter of an hour. During the whole process of bathing, the body should not remain inactive, but be gently rubbed with the hand, and afterwards cleaned with a soft sponge. It is of consequence to attend to the point of time, when the child is taken out of the bath; for in almost every instance where warm bathing disagrees with the child, it will be found owing to neglect in not wiping and drying the body with sufficient expedition at this particular period. Hence it is highly necessary to keep warm cloaths in readiness, in which the child should be wrapped up, and dried, the very moment it is taken out of the bath. Every one in the habit of bathing must have

observed, that the evaporation of water on the skin excites penetrating and uncomfortable sensations of cold; and there is an astonishing difference of temperature between actually being in the water, and having water on the skin after quitting the bath. If, therefore, a child, from want of due precaution, be kept for several minutes with a naked, wet body, it will be liable to contract a cold, the more dangerous in its consequences, as it immediately succeeds a state, in which the body is warm and the skin open.

It should be further observed, that bathing, immediately after a meal, or with a full stomach, is highly improper, if not dangerous, both in children and adults; nor is it advisable, in rough weather, to carry a child into the open air too soon after bathing. The most proper time for using the bath is the evening, when the child can be removed to bed, as soon as it is completely dried.

There is another species of bath, equally indispensable, which I will call the *Air-bath*; or the daily enjoyment of fresh air. This is usually considered as a promenade, or walk of pleasure; and as children cannot judge of its great utility, and the weather is not always favourable for excursions, parents are sometimes guilty of unpardonable neglect, in confining infants for whole days and weeks together within their rooms. But if air be essentially requisite to animate the most subtle powers of man, it follows, that it is as necessary to the organs of life as food and drink; and that its salutary influence on the consti-

tution does not so much depend on the state of it with respect to pleasantness and serenity, as on its freshness and constant renewal. Hence I would impress it on the reader, as a rule not to be departed from, *to let no day elapse, without affording the child an opportunity of imbibing the salubrious qualities of fresh air.* In the first months great precaution is necessary, and children born in spring or summer have in this respect no small advantages, as there is less danger in exposing them to the open air during the warm months, than there is in autumn and winter. In the milder seasons, too, violent winds, and moist weather, cannot be too carefully avoided. After the two first months of its existence, if the child has been duly habituated to fresh air, it may be safely carried out in *any* state of the weather: this ought to be regularly done every day, if it be only for half an hour, as it is one of the most nourishing cordials that can be given. I shall just notice here, in a cursory way, the great benefit which the eyes of children derive from this practice, and which, particularly at a time when complaints of weak and sore eyes are heard in almost every family, is of the utmost importance. It is an unquestionable fact, that the shortness of sight, and weakness of the eyes, so prevalent among the inhabitants of towns, is chiefly owing to the injudicious custom of confining children, during the first years of their lives, almost constantly within four walls; so that the eye, being accustomed to *near* objects only, becomes organized for a narrow view, and at length

is rendered incapable of forming the focus properly for *distant* objects. On the other hand, it is equally certain, that by an early and daily exertion of the organs of sight, in beholding remote objects, in the open air, the circle of vision is enlarged, the power of sight increased, and a solid foundation laid for acquiring a clear and comprehensive discernment of objects.

From the preceding observations, it will be readily admitted, that the proper and daily airing of the nursery, *in winter as well as in summer*, is of no small importance to the well-being of children. It has been proved by many fatal instances, that a confined and impure air is of itself capable of exciting the most violent convulsive symptoms, and consequently is one of the principal causes, that so many infants die of convulsions, during the first months of their lives. Would it not be more eligible, to select the most airy apartment in the house for a nursery, than low and confined garrets, as is too frequently the case in large families? The room, in which children breathe, should at least be capacious and lofty, and exposed to the cheering rays of the sun, which not only influence the temper and spirits of children, but serve to purify the corrupted air in their apartments.

Persons unaccustomed to reflect on this subject, can scarcely conceive, what salutary effects the simple means here recommended, namely, the early habit of washing, bathing, and daily airing, produce on the constitution, and physical formation of the child. The

habit of body, growth, and appearance of children, properly educated in this respect, will be totally different from those, who are reared like foreign plants in a hot-house. To point out still more forcibly the peculiar advantages attending the regimen here recommended, I shall exhibit a picture of such children, not taken from fancy, but authorized by facts, and according with the experience of many modern observers, as well as my own, and that of a respectable physician in Germany, Professor Hufeland of Jena, to whom I am greatly indebted for the following observations :

1. A child thus treated is more hardy and less affected by the vicissitudes of climate and weather.

2. Its body is straight and robust ; its limbs are uniformly muscular, and well proportioned.

3. The stages of evolution, in its different organs, take place in regular succession ;—no power, no capacity, outstrips another ; its teeth do not appear too soon, nor at irregular periods ; the child does not begin to walk too early nor too late ; and the same order is observable with regard to its speaking. Even the mental faculties expand themselves more regularly, that is, not too rapidly, but after the most important bodily changes have been effected. Every period of its progress to maturity comes on in a natural and gradual manner, so that the child, in a physical sense, longer remains a child ;—he does not shoot up into manhood, before he has completed

the proper term of youth ; and thus every stage, as well as the whole career of his existence, is considerably prolonged.

4. By this treatment the circulation of the fluids, and all internal motions, particularly of the lungs and intestines, together with the usual evacuations, are beneficially promoted. Of no less advantage is the bath to those children, that are subject to habitual costiveness ; a distemperature which cannot be too much guarded against, not only during the age of childhood, but also through the whole life. Infants accustomed to the bath, and fresh air, are scarcely ever known to suffer from this complaint.

5. The texture of their muscular flesh becomes solid, the colour blooming, and the body neither appears tumid and spongy, nor parched and meagre. The complexion is lively and fresh ;—the head and lower belly are in just proportion to the rest of the body, and the disposition to rickets, so common in children, is not perceived in them.

6. Neither are such children as enjoy the benefit of the bath affected by that excessive sensibility and diseased irritability of the nervous system, which in many instances so fatally degenerates into spasms, fits, and convulsions. These irregularities, in early life, are chiefly instrumental in bringing on that pitiable state, in which some unhappy persons, through the whole of their lives, are little better than *loco-motive nervous machines*—organized beings, that exist apparently for the sake of *feeling only, not for acting.*

7. Diseases of the skin, eruptions, catarrhs, coughs, obstructions of the first passages, &c. are rarely observed to attack a child properly treated; and if they do, their duration will be short, and the *crises* easy and natural.

8. Those diseases in children, which are commonly called dangerous, as the small-pox, measles, scarlet fever, &c. and which are ultimately diseases of the skin, are greatly alleviated in their symptoms, and more easily overcome, when the skin is in full health and vigour;—but as the usual management of children deprives the skin of those properties, we need not be at all surpris'd at the danger and subsequent mortality of children, in the above-mentioned diseases.

9. The early practice of washing and bathing may be also recommended, as tending to strengthen that sense of cleanliness, which is so praiseworthy and useful in itself; and which is not sufficiently cultivated among those nations, where the bath is in disuse.\*

If the means above stated are expected to produce their full effect, it should not be forgotten, that the *whole* management of the child ought to correspond and keep pace with

\* The Russians, notwithstanding their ignorance, and rusticity of manners, take the lead of the more refined French and Germans, both in a delicate sensibility of cleanliness, and in the practical use of the bath. I lately read of a foreign gentleman, travelling in Russia, who had hired one of the natives as his groom or postillion. After having travelled several days together in very sultry weather, the semi-barbarian upon his knees requested his employer to grant him leave of absence for two or three hours, to refresh himself with the luxury of a bath, which to him was indispensable, and the want of which he had long felt. The *peasants* in that country possess a refinement of sense, with respect to the surface of the body, with which the most elegant *ladies* in other countries seem totally unacquainted.

the preceding practice. Without attending to this condition, constant washing and bathing may not only prove of little service, but may in some instances be productive of mischief. Hence it is absolutely necessary to prohibit the use of feather-beds, cumbersome dresses, &c. and to avoid all suffocating rooms, whether occasioned by too great heat, or an offensive corrupted atmosphere.

There is no practice more detrimental to the powers and energy of man, in the first period of his evolution, than that of immediately sinking the tender infant in a soft feather-bed. In this situation, all the organs become extremely relaxed, and we lay the foundation of a very serious malady, a *sweating-skin*; the source of constant colds, tooth-achs, head-achs, catarrhs, and innumerable other complaints.

For these and similar reasons, I would advise parents to lay their children, from the very hour of their birth, on soft and cooling mattresses, under thin blanket covers, or cotton quilts, which do not incommode the body, leave the hands and arms at liberty, and are not liable to excite too great a degree of heat. In the intense cold of winter, an additional blanket may be used, which, however, should be removed when the weather turns milder, and the child grows stronger. But the greatest mischief arises from bolsters or pillows filled with feathers; which must, after a certain time, produce uncleanness and a disagreeable smell. Such a pillow is calculated to collect and retain mephitic vapours;

and for this obvious reason it cannot but be unsafe to sleep for a whole twelvemonth with one's head reposed on such a mass of acrid exhalations. This inconvenience may be easily avoided, by furnishing children with cushions filled with horse-hair, or with the softest bran, previously well beaten; the best for this purpose is the bran of oats. The great advantage of these pillows is, that they admit moisture to pass through them, consequently they will always remain dry; and may from time to time be renewed, while they preserve a moderate and regular degree of warmth.

*Cleanliness*, in domestic life, is one of the cardinal virtues, and an essential requisite to the proper physical education of children. Indeed, I cannot help remarking, that this is perhaps the *only* province of parental care, in which we *never* can do *too much*. For this end, we ought not to neglect the article of linen, as the frequent change of it is of more consequence than many parents are aware of. A child is much more liable to perspire than an adult; the natural effect of which is, that its linen is more readily soiled and rendered unfit for wearing. I would therefore advise all parents, who can afford it, to give their children clean, dry linen *every day*. An undoubted proof of the utility of this practice is, that instances have occurred of children being cured of the rickets, when, from the first appearance of that complaint, they have been daily furnished with clean linen, well dried, and occasionally smoked with juniper-berries, frankincense, or other perfuming sub-

stances, in order to expel the moisture, which is absorbed by linen. But if a clean change cannot be conveniently had every day, the night-shirt as well as that of the day, ought to be regularly dried, and perfumed if necessary.

Lastly, let the dress of children be light; the head and breast during the first months may be covered, though very slightly; but as soon as the hair is sufficiently strong to afford protection, there is scarcely any necessity for hats or caps, unless in rainy or cold seasons. The breast and neck too acquire more firmness, and are rendered hardier, by keeping them uncovered; as our frequent colds and sore throats chiefly originate from the absurd habit of wearing bosom-friends and stiffened cravats.

I shall conclude these observations with an historical account from HERODOTUS, which clearly illustrates the advantage attending the cool regimen of the head. This judicious and learned writer informs us, that after the battle fought between the *Persians*, under CAMBYSES, and the *Egyptians*, the slain of both nations were separated: and upon examining the heads of the *Persians*, their skulls were found to be so thin and tender, that a small stone would immediately perforate them: while on the other hand, the heads of the *Egyptians* were so firm, that they could scarcely be fractured by the largest stones. The cause of this remarkable difference Herodotus ascribes to a custom the *Egyptians* had of shaving their heads from the earliest infan-

cy, and going uncovered in all states of the weather; whereas the Persians always kept their heads warm, by wearing heavy turbans.

I sincerely wish, that the rules and observations, here submitted to the candid reader, were more generally understood and practised, so far at least as they are found to accord with reason and experience. I am not however disposed to imagine, that plans of *sudden* improvement are the most likely to succeed; and I am well aware of the difficulties we must expect to encounter, when we attack old and rooted prejudices, with the hope of vanquishing them *all at once*. For though I should be fortunate enough to substitute sounder opinions and better practices, in lieu of those already established, yet, unless the mind be prepared for such changes, by a proper philosophic culture, nothing is more probable, than that a speedy relapse into former errors will be the necessary consequence. The history of our own time has, in some recent instances, evidently confirmed the truth of this observation. We find even the mandates of arbitrary power insufficient to produce a thorough reform in the manners and customs of a superstitious people. The philanthropic but weak emperor JOSEPH II. was obliged to yield to the torrent of popular prejudice; and, in spite of his better reason, frequently to repeal measures dictated by the enlightened genius of philosophy. His obstinate and infatuated subjects were not fully ripe for such salutary innovations. Our age is scarcely docile enough to pursue those im-

provements, which a rapid and continual progress in the sciences is daily suggesting. Upon this ground alone we can explain the frequent and obvious contrast between the prevailing theories and practices, both in the higher and lower walks of life. A great majority of the common people, from their habitual indifference to literature, and their aversion to serious reflection, still manifest their ancient prejudices to every thing which falls under the description of novelty or improvement. More than one generation will probably elapse, before even a part of the useful hints can be realized, which lie dispersed in the later writings on subjects of health and domestic economy. Whatever benefits can be attained by popular instruction, both with regard to the treatment of children and adults, must be introduced in a gradual manner. The ancient treatment of children, being consecrated by time, must not be rudely and precipitately rejected; but old customs may be changed by prudent and moderate management; and thus we may proceed from one step to another, in extending the boundaries of truth and reason. A gradual transition from a faulty to a better state of things, is commonly the most permanent. Let us combat, at first, the most dangerous notions and prejudices: the conquest over a *single* prejudice, if it be completely extirpated, is a triumph of no little moment; inasmuch as it will shake the foundation of many others, more or less connected with it.

In my earnest endeavours to caution the reader against inveterate prejudices, I do not mean to insinuate, that a perfect and permanent state of health is compatible with the delicate organization and complex functions of the human body : I am well aware, that its most healthy condition closely borders on disease, and that the seeds of distempers are already planted in the very fulness or luxuriance of our fluids. Hence no *absolute* perfection is to be found among mortals, whether we consider them in a physical or moral state. CICERO illustrates this position, when speaking of man as a moral agent, with equal truth and energy, in the following words : “ He is not,” says this philosophical orator, “ the most virtuous man, who commits *no* faults ; but I consider him as the most virtuous, whose conscience reproaches with the *fewest*.”

## C H A P. I.

*A Practical Inquiry into the means and plans adopted among different nations, with a view to prolong human life.—An historical survey of this interesting subject, in different ages; together with the success which has attended the respective efforts made by nations and individuals.—A brief statement of the conditions requisite to the attainment of a long and healthy life.—Observations, rules, and cautions deduced from the experience of ages.—Symptoms of actual dissolution.—Summary account of a dietetic system; explanation of its design, and the vast diversity of objects comprehended under this popular science.*

**A**S the enjoyment of ‘a sound mind in a sound body’ is one of the greatest of terrestrial blessings, it is incumbent on every rational inquirer, to devote some portion of his time and industry to the research of such useful and practical objects, as may contribute to improve and insure so desirable a state.

As long as the various functions of the human body, the voluntary as well as the involuntary motions, are performed with ease, and suffer no interruption, we usually pronounce the body to be in a state of health; in the contrary case we call it diseased. I shall advance a step further, and assert, that when we do not feel ourselves encumbered with the

weight of our own frame, and when we are not disposed to reflect, with uneasiness and solicitude, upon its physical condition, then we have a right to consider our health as being in a perfect state.

Although we are liable to suffer from the attacks of disease, in a variety of shapes, yet we have abundant reason to contemplate with satisfaction the chequered condition of human life: for, even in the present imperfect state of things, we find comforts more than sufficient to counterbalance our sorrows. Considering the innumerable accidents, to which we are daily and hourly exposed, it is a matter of just surprise, that frail, imbecile man should remain in health during the greater part of his life; and still more so, that, upon an average, the number of healthy individuals should be found far to exceed those in a contrary state. If we further advert to the want of thought and circumspection, which marks the conduct of man in general, in the treatment of his body, our astonishment will necessarily increase, that he so often escapes the dangers prepared by his own hands. But parental Nature frequently repairs the injury, though we are not conscious of her salutary efforts. She powerfully co-operates, when art is called in aid, to restore that harmony and order in the system, which had been imprudently or inadvertently disturbed. To her healing powers we are principally indebted, if the sufferings resulting from ignorance or obstinacy are less severe, than the extent of the mischief seemed to portend.

It cannot be expected, that persons unacquainted with the economy of the human frame should be able to discriminate between internal and external causes, and their effects. Where a competent share of this knowledge is wanting, it will be impossible to ascertain, or to counteract, the different causes by which our health is affected ; and should a fortunate individual ever fix upon a suitable remedy, he will be indebted to chance alone for the discovery.

This has been the case in all ages, and alas ! it is still deplorably the case. Remedies have from time to time been devised, not merely to serve as *Nostrums for all diseases*, but also for the pretended purpose of *prolonging human life*. Those of the latter kind have been applied with a view to resist or check many operations of nature, which insensibly consume the vital heat, and other powers of life, such as respiration, muscular irritability, &c. Thus, from the implicit credulity of some, and the exuberant imagination of others, observations and experiments, however discordant with sound reason and philosophy, were multiplied, with the avowed design of establishing proofs or refutations of this or that absurd opinion. In this manner have fanaticism and imposture falsified the plainest truths, or forged the most unfounded and ridiculous claims ; so that one glaring inconsistency was employed to combat another, and folly succeeded folly, till a fund of materials has been transmitted to posterity, sufficient to form a concise history of this subject.

Men, in all ages, have set a just value on long life; and in proportion to the means of enjoying the same, this value has been felt in a greater or less degree. If the gratification of the sensual appetite formed the principal object of living, the prolongation of it would be, to the epicure, as desirable, as the prospect of a life to be enjoyed beyond the limits of the grave, is to the moralist and the believer.

In the Old Testament, the promise of a long life was held up as one of the most important sources of consolation: and, conformably to the principles of Christianity, a patient continuance in well-doing, or, in other words, a long life rich in good works, can best insure the hope of a more happy state in a future world. Hence the wish of a speedy termination of our existence here, is one of those eccentricities, into which only persons deprived of reason are liable to be drawn, either from extreme anxiety, or the want of mental fortitude. The desire of longevity seems to be inherent in all animal life, and particularly in human nature: it is intimately cherished by us, throughout the whole of our existence, and is frequently supported and strengthened, not only by justifiable means, but also by various species of collusion.

The possibility of prolonging human life was never doubted by the Orientals, even in the earliest ages. One of the most ancient methods on record, is that of placing the aged and decrepit in the vicinity of an atmosphere, replete with the exhalations of blooming youth. It is not improbable, that a certain

custom then prevailing in the East, by alluring the fancy with beautiful images, and by imposing upon the understanding through poetical fictions, first induced man to entertain this singular notion. The bloom of a juvenile age, and particularly the healthful virgin, was compared, by the Orientals, with roses, lilies, and other elegant flowers; she was introduced in allegorical description, to represent odoriferous spices, balms, and oils, and was made the subject of pastoral and other poems. How easy, then, the transition from fancy to belief, that the exhalations of vigorous and healthy persons must be highly conducive to the support of exhausted age; that they were capable, like the fragrant balms of the East, of softening the rigidity of the fibres, of exciting the vital spirits, and, in short, of supplying the aged with a fresh stock of health. The history of KING DAVID furnishes us with a striking illustration of this renovating process.

In the writings of the ancient physicians, we meet with various accounts, from which we learn, that this method has ever been a favourite resource of invalids, worn out with age. Modern physicians also mention the practice, and the celebrated BOERHAAVE informs us, that he advised an old and decrepit burgomaster at Amsterdam to sleep between two young persons; and that his patient, who before was sinking under the weight of infirmities, obviously recovered strength and cheerfulness of mind.

The great age of some schoolmasters has

likewise been ascribed to the benefit they derive from breathing, almost constantly, among young and healthy children. It has been farther observed, that young persons, if they sleep in company with the aged; become lean and enfeebled.—Upon more accurate inquiries, however, it is pretty evident, that most of the benefits (perhaps all of them) which the aged derive from this expedient, may be placed to the account of the imagination, and its surprising effects on the body. It is this power which, in my opinion, renews the languishing flame of the aged, and which may preserve them for some time longer in that renovated state, provided it be supported by a proper attention to diet and other circumstances.—We frequently see a debilitated and peevish old man assume a complacent smiling aspect, when a sprightly maiden addresses him in the language of courteous pleasantry. The most charming images recur to his stimulated imagination; and the powers of life are, as it were, again roused, and directed to one object. That such means of reanimating old age, may have a favourable effect on health, cannot be disputed.

To imagine, however, that the vigour of health and the bloom of youth can be transfused by insensible perspiration, or exhalation, into the body of the aged, is to labour under a very palpable mistake. I shall prove, in the next Chapter “On Air and Weather,” that every living being necessarily corrupts the air more or less by its respiration; and that the atmosphere, thus impregnated, be-

comes unfit for other beings to breathe in ; because every expiration contains certain particles, which are separated by the lungs, as being uselefs and noxious to the body. How then is it conceivable, that matters or substances should be hurtful to one body, if retained in it, and useful to another, if communicated to it? Or was it supposed, that the *watery parts* of insensible exhalation from the young body, could moisten and refresh the parched fibres of the aged? To accomplish this purpose, we are possessed of remedies much purer and more effectual. Natural warmth or heat is the only means competent to produce such a salutary effect; as that alone is capable of exciting the slumbering energy of life. And in this respect, I apprehend, we ought to do justice to the above-described method practised by the ancients.

When young persons live or sleep with old people, and are observed to grow thin and infirm, (which however is not always the case) that proceeds from another circumstance, namely, that the former absorb or inhale the noxious particles of the latter; but from this it by no means follows, that the aged body attracts the vital principle from the younger. Although free *caloric*, or matter of heat, may probably pass over from the young body into that of the aged; yet this transfusion, under certain circumstances, would be rather to the advantage than disadvantage of the former; inasmuch as this deprivation of superfluous caloric is not unfrequently found to be serviceable and wholesome.

From the preceding remarks we may conceive, that a school-room filled with the various exhalations of children, cannot conduce to the prolongation of life; and, consequently, that the great age of certain schoolmasters must be ascribed to some other cause. An accurate account of the mortality prevailing among that class of men would satisfactorily demonstrate, that the age of schoolmasters is in a just proportion to that of other classes of society.

I shall now consider several other plans, that have been adopted for the prolongation of human life.

The Egyptians, who lived in a country rendered unwholesome by intense heat and frequent inundations, could not long remain ignorant of the comparative longevity of their northern neighbours, the Greeks. After many fruitless attempts to discover the true cause of their short life, and to provide the means of removing that cause, they at length became fanatical enough to imagine themselves possessed of the grand secret for prolonging life—in the constant use of sudorifics and emetics. The air of Egypt, being impregnated with aqueous and putrid particles, not only checked the process of perspiration, but also generated various epidemic distempers. In such cases, sudorific medicines were necessary and proper; and even emetics, by exciting a forcible commotion through the whole system, not unfrequently restored the activity of the cutaneous vessels, and thus produced a favourable effect in those mala-

dies. Farther, the heat of the climate inspissated their fluids; this circumstance, connected with their usual mode of life, and their crude articles of food, necessarily brought on an excess of bile, which overflowing the stomach upon the least occasion, could not fail, sooner or later, to occasion very obstinate diseases. The emetics, therefore, being eminently qualified to evacuate the bile, would of course obtain general reputation among the Egyptians. These and the sudorifics were for a long time considered as specific remedies; from their tendency to expel the matter so dangerous to life; and because in those ages diseases were considered the *only* enemies to longevity: the Egyptian physicians and philosophers not being able to distinguish between effects and their causes, the latter of which existed in the pestilential vapours of a hot climate.

Thus it became a custom to take at least two emetics every month; to inquire of acquaintances and friends, how those medicines had operated, and to wish each other joy upon these occasions. I need not observe, that this singular method of prolonging life is not to be recommended as worthy of imitation; that the periodical custom of taking medicinal remedies renders their frequent repetition necessary, while it destroys their occasional efficacy; and that it therefore chiefly belongs to the department of the physician to determine, when, and in what degree, such medicines are to be administered.

The Greeks lived in a more romantic and

picturesque country ; their conceptions with regard to the structure and functions of the human frame were more correct and conformable to nature. Their philosophers and physicians were more enlightened and less prejudiced than those of Egypt ; they were not, like the latter, under the capricious influence of a wild imagination, too frequently disordered by the effects of BLACK BILE. Nature, displayed in all her charms, in the sublime and beautiful scenery of their country, every where invited them to the enjoyment of free and pure air ; the effects of this on their susceptible nerves, combined with an excellent system of bodily exercise, proved the best specific for counteracting the effects of time, and thus prolonging their active, healthful lives. For this great and beneficial purpose, particular methods and rules were contrived, in order to give the body the most varied and effectual, yet gentle motions ;—these athletic exercises were judiciously adapted to the different constitutions, situations, and ages of life, so that the sagacious Greeks arrived at an extraordinary degree of perfection in the *gymnastic art*.

The great advantage of such a course of bodily exercise cannot be disputed, when we consider how many individuals in all countries die prematurely from want of activity, motion, and nervous energy ; though their organization may be in no respect faulty. Besides, a body inured to frequent and laborious exercise, will not be easily affected by external causes of disease ; being secured, as

it were, by a coat of mail, against the attacks of many acute disorders.

The Greeks carried, to a still greater degree, the system of gymnastic motions. By the same method they attempted to cure diseases in their first stages, not excepting such as were already formed, and to put a stop to their further progress. They caused the patient to move in various positions; they applied gentle friction to the whole surface of the body; and used different methods to overcome the languor of the muscles, by exciting and stimulating the muscular energy.

In relaxed, weakly individuals, whose organization is deficient in the proper degree of tension or elasticity, this method must be allowed to possess great advantages; but I do not conceive it necessary to prove here, that it cannot be consistently applied to *all* diseases. It is not to be supposed, that the weary traveller can be either strengthened or refreshed by additional exercise.

The modern methods of bracing the human body, such as frequent bathing in cold water, exposing the body to all the vicissitudes of climate and weather, the various modes of supporting bodily fatigue, as travelling on horseback and on foot, &c. which are so indiscriminately recommended to our aspiring youth, cannot in every instance fortify and render the human frame indestructible:—on the contrary, *all such violent efforts* have a tendency to bring on the symptoms of age, at a much earlier period than it ought to appear; as the joints and muscles are there-

by rendered liable to contract an uncommon degree of stiffness and rigidity.—To load tender youth with burthens disproportionate to their age, and to impose upon them the task of men, can never be the most proper means of hardening and preparing them for a long and active life.

A distinction, however, should be made here, between bracing the *fibres*, of which all solid parts of the body consist, and bracing the sense of *touch* or *feeling*. The animal fibres may be solid, but should not be so rigid as to become insensible; a certain degree of irritability is necessary to the proper exercise of their contracting and relaxing power. If, further, there should exist in the body a disposition towards rigidity and insensibility, any artificial modes of bracing it will be of dangerous tendency. If, on the contrary, the fibres should be too irritable, the Grecian method may, in that case, be resorted to with safety and advantage. A striking instance of this occurs in the history of Captain Cook. On his arrival in the Friendly Islands, he was seized with an acute rheumatism, attended with excruciating pains. He was soon relieved from this torturing situation, by the easy and instinctive process of gentle friction, which the Islanders generally followed on such occasions. Thus a few untutored persons completely effected what could not have been sooner, nor more easily accomplished by the systematic art of the learned.

From these considerations we may safely infer, 1. That the cold bath, gymnastic exer-

cises, bodily fatigue of any kind, and all expedients to brace and invigorate the constitution, ought only to be adopted under certain limitations, viz. with a proper regard to particular cases and circumstances: and, 2. That these severe remedies cannot and ought not to be universally nor indiscriminately recommended, as methods of prolonging life.

Let us not, however, disparage the merits of that ingenious race of men, whom we only know from their inimitable works. For, although the method of the Greeks cannot be safely introduced among us, without many and great exceptions, we must do them the justice to allow, that in their operations of hardening the human body, they proceeded in a more cautious, gradual, and judicious manner, than the moderns seem willing to submit to. Sudden changes of any kind produce a sort of revolution in the body, and this is necessarily attended with a waste of strength, proportionate to the violence of the shock.

*Plutarch* possessed clear and rational ideas on the subject of preserving and prolonging human life; the truth of which he confirmed by his own experience, during a series of many happy years. He advises to keep the head cool and the feet warm, not immediately to take medicines on every slight indisposition, but rather to let Nature relieve herself by fasting a day, and, in attending to the mind, never to forget the body. Much learning is compressed in these golden precepts, which will be valuable as long as hu-

man nature remains the same. The attention bestowed upon the mind, however laudable, should not authorise us to neglect the care of the body; the intimate connexion subsisting between both requires a due proportion of care and attention to be paid to each. In the same degree, as a diseased body sympathetically torments the mind, so does an infirm mind agitate and harass the body; and such tortures and reciprocal affections are unavoidably attended with the consumption of animal life.—What Plutarch enjoins, with respect to keeping the head cool and the feet warm, is agreeable to reason and experience; we should not, however, imagine, that the grand secret of prolonging life consists in the sole observance of these maxims. The head and feet are not the only points, in which life is concentrated; they may indeed have a beneficial or pernicious influence on the whole body, and in this respect they demand a share of our attention; but no other part ought on that account to escape our notice.

I now enter upon a very unpleasant task, namely, that of reviewing a period of darkness, during the barbarity of the middle ages, when the progress of true knowledge was obstructed by the most absurd fancies and childish conceits; when conjectures, caprices and dreams supplied the place of the most useful sciences, of the most important truths. Chemistry, so essentially requisite to explain the phenomena of known and unknown substances, fell into the hands of jugglers and fanatics;—their systems, replete with philo-

sophic nonsense, and composed of the most crude, heterogeneous materials, served rather to nourish superstition than to establish facts and illustrate useful truths. Universal remedies, in various forms, met with strenuous advocates and deluded consumers. The path of accurate observation and experiment was forsaken; far from penetrating into the mysterious recesses of Nature, they bewildered themselves in the labyrinth of fanciful speculation; they overstepped the bounds of good sense, modesty, and truth, and the blind led the blind.

The prolongation of life, too, was no longer sought for in a manner agreeable to the dictates of Nature; even this interesting branch of human pursuits was rendered subservient to Chemistry, or rather to the confused system of Alchemy. *Original matter* was looked upon to be the elementary cause of all beings; by this they expected literally to work miracles, to transmute the base into noble metals, to metamorphose man in his animal state by chemical process, to render him more durable, and to secure him against early decline and dissolution. Millions of vessels, retorts, and phials were either exposed to the action of the most violent artificial heat, or to the natural warmth of the sun; or else they were buried in some dunghill, or other fetid mass, for the purpose of apprehending this *original matter*, or obtaining it from putrescible substances.

As the substance called Gold always bore the highest value among metals, these mon-

grel philosophers concluded, from a ridiculous analogy, that its value, with respect to the preservation of health, and the cure of diseases, must likewise surpass that of all other remedies. The nugatory art of dissolving it, so as to render it potable, and to prevent it from being again converted into metal, employed a multitude of busy idiots, not only in concealed corners, but in the splendid laboratories of the palaces of the great. Sovereigns, magistrates, counsellors, and impostors, were struck with the common frenzy, entered into friendship and alliance, formed private fraternities, and sometimes proceeded to such a pitch of extravagance, as to involve themselves and their posterity in ruinous debts. The real object of many was, doubtless, to gratify their avarice and desire of aggrandisement, although this sinister motive was concealed under the specious pretext of searching for a remedy, that should serve as a tincture of life, both for the healthy and diseased; yet some among these whimsical mortals were actuated by more honourable motives, zealous only for the interests of truth, and the well-being of their fellow-creatures. The common people in some countries, particularly Italy, Germany, and France, often denied themselves the necessaries of life, to save as much as would purchase a few drops of the tincture of gold, which was offered for sale by some superstitious or fraudulent chemist: and so thoroughly persuaded were they of the efficacy of this remedy, that it afforded them in every instance the most confident and

only hope of recovery. These beneficial effects were positively promised, but were looked for in vain. All-subduing Death would not submit to be bribed with gold, and Disease refused to hold any intercourse with that powerful deity, who presides over the trade and commerce of nations.

As, however, these diversified and almost numberless experiments were frequently productive of useful inventions in the arts and manufactures; and as many chemical remedies of real value were thereby accidentally discovered, the great and general attention to those bold projectors, was constantly kept alive and excited. Indeed, we are indebted to their curious operations, or rather perhaps to chance, for several valuable medicines, the excellence of which cannot be disputed, but which, nevertheless, require more precaution in their use and application, and more perspicacity and diligence in investigating their nature and properties, than the original preparers of such articles were able or willing to afford.

All their endeavours to prolong life, by artificial means, could not be attended with beneficial effects; and the application of the remedies thus contrived, must necessarily, in many cases, prove detrimental to the health of the patient. In proof of this assertion, it will be sufficient to give a slight sketch of the different views and opinions of the Goldmakers, Rosencrucians, manufacturers of Astralian Salts, of the Drops of Life, and Tinctures of Gold, hunters after the Philosopher's Stone,

&c. &c. Some of these enthusiasts fancied life to resemble a flame, from which the body derived warmth, spirit, and animation. This flame they endeavoured to cherish and to increase by their remedies, supplying the body with materials to feed the same, as we pour oil into a burning lamp.

Others imagined they had discovered something invisible and incorporeal in the air, that important medium in supporting the life of man. They pretended to catch, to refine, and so to reduce and *materialize* this undefinable something, that it might be swallowed in the form of powders or drops; that by its penetrating powers it might insinuate itself into the whole animal frame, invigorating and qualifying it for a longer and healthier duration than usual.

Others again were foolish enough to cherish a notion, that they could divest themselves of the properties of matter during this life; that in this manner they might be defended against the gradual approaches of dissolution, to which every animal body is subject; and that thus fortified, without quitting their terrestrial tabernacle, they could associate at pleasure with the inhabitants of the spiritual world.

The Sacred Volume itself was interpreted and commented upon by the Operators and Alchemists, with a view to render it subservient to their interested designs. Indisputable historical facts, recorded in this invaluable book, were treated by them as hieroglyphical symbols, which contained chemical processes:

and the fundamental truths of the Christian religion were applied, in a wanton and blasphemous manner, to the purposes of making Gold, and distilling the Elixir of Life.

The productions of Alchemy, far from answering the purpose of prolonging life, have rather a contrary tendency. All the remedies which it affords, are of a heating and stimulating nature. The person who takes them will feel himself more cheerful for some time, and on that account he may fancy himself more vigorous and juvenile; as they certainly give an additional impulse to the sensations of life, like wine, spirits, and all other stimulants. But this increase of the *sensation of life* should by no means be confounded with an increase of the *power of life*. It may be even safely affirmed, that by the increase of vital sensations, the career of life itself is accelerated, and the consumption of it sooner exhausted; consequently the duration of the body is necessarily shortened.

I should not omit to mention, that these remedies strongly increase the sensitive power of man, they predispose him to sensual pursuits, stimulate him to commit excesses of every kind, incite him to take continual or excessive exercise, as dancing, and the like, and thus by inevitable consequence hasten the waste and dissolution of the body. That, for instance, which, according to the natural course, ought to be expended or consumed in three days, is dissipated perhaps in as many jovial hours. This premature loss is attended with relaxation, irksomeness, and even

aversion to life, till a new dose of stimulants reproduces the former false vivacity. It fares with the patient here, as it does with the hard drinker, who trembles in the morning that follows his nightly debauch, feels his whole frame relaxed, inactive and torpid, and is in a manner obliged to take a fresh dram of his favourite liquor, before he can enter on any serious business, with pleasure or effect.

These famous essences, balms, tinctures of life, &c. are farther dangerous, as they contract the small vessels, so necessary to the preservation of life, as well as to the reparation of the losses sustained, and thus render them unfit to perform their offices. Hence arise rigidity or stiffness, and exsiccation; the body shrivels, and the symptoms of old age appear at an earlier period than they would otherwise have done. Man is seldom unprovided with the supplies of vitality;—every draught of air we inhale, and every particle of food we swallow, is a fresh accession to the stock of life. But as soon as the *susceptibility* or *power of receiving* those supplies becomes languid, we then may be considered as unfit to perform the functions of life; and all the medicaments of nature and art will be found insufficient to relieve us. He who searches for the supplies of life in alchemical productions, elixirs, balsamic essences, &c. will sooner or later, but always prematurely, experience the want of susceptibility. Even that impudent boaster and celebrated *insurer of lives*, THEOPHRASTUS PARACELSUS, although he pretended to have in his possession the

stone of immortality, died—in his fiftieth year! His vegetable sulphur was a heating and stimulating remedy, partly similar to the Anodyne Liquor of Hoffmann.

The world of spirits also was invaded, and summoned, as it were, to contribute to the prolongation of human life. Spirits were supposed to have the rule of air, fire, earth, and water; they were divided into particular classes, and particular services ascribed to each. The malevolent spirits were opposed and counteracted by various means of prevention: the good and tutelary were obliged to submit to a sort of gentle, involuntary servitude. From invisible beings were expected and demanded visible means of assistance—riches—health—friends—and long life. Thus the poor spirits were profanely maltreated, nay they were sometimes punished, and even miserably flogged in effigy, when they betrayed symptoms of disaffection, or want of implicit loyalty.

As men had thus, in their weakness and folly, forsaken the bounds of this terrestrial sphere, it will easily be believed, that with the help of an exuberant imagination, they would make a transition to the higher regions—to the celestial bodies and the stars, to which indeed they ascribed no less a power than that of deciding the destinies of men, and which, consequently, must have had a considerable share in shortening or prolonging the duration of human life. Every nation or kingdom was subjected to the dominion of its particular planet, the time of whose

government was determined; and a number of ascendant powers were fictitiously contrived, with a view to reduce under its influence every thing which was produced and born during its administration.

The professors of astrology appeared as the confidants of these invisible rulers, and the interpreters of their will; they very well understood the art of giving a respectable appearance to this usurped dignity. Provided they could but ascertain the hour and minute of a person's birth, they confidently took upon themselves to predict his mental capacities, future vicissitudes of life, diseases, together with the circumstances, the day, and the hour of his death. Not only the common people, or the less informed classes of society, but the most respectable men for learning and abilities, nay even those of the highest rank and station, did homage to those "gods of their idolatry," and lived in continual dread of their occult powers. With anxious countenances and attentive ears, they listened to the effusions of those self-appointed oracles, which prognosticated the bright or gloomy days of futurity. Even physicians were solicitous to qualify themselves for an appointment no less lucrative than respectable:—they forgot, over the dazzling hoards of Mammon, *that they were peculiarly and professedly the pupils of Nature.* The curious student in the Universities found every where public Lecturers, who undertook to instruct him in the profound arts of divination, chiromancy, and the famous *cabala*.

Not to mention other instances, I shall cite that of the noted *Thurneisen*, in the last century, who was invested at Berlin with the respective offices of Printer to the Court, Bookseller, Almanack-maker, Astrologer, Chemist, and First Physician. Messengers daily arrived from the most respectable houses in Germany, Poland, Hungary, Denmark, and even from England, for the purpose of consulting him respecting the future fortunes of new-born infants, acquainting him with the hour of their nativity, and soliciting his advice and directions as to their management. Many volumes of this singular correspondence are still preserved in the Royal Library at Berlin. The business of this fortunate adept increased so rapidly, that he found it necessary to employ a number of subaltern assistants, who, together with their master, realized considerable fortunes. He died in high reputation and favour with his superstitious cotemporaries; and *Thurneisen's* Astrological Almanack is yet published in some of the less enlightened provinces of Germany. But it may be asked, how it happens, that an art which determines the fate of mortals, and ascertains the impassable limits of human life, can at the same time serve as the means of prolonging it? This I shall now proceed to account for. The teachers of divination maintained, that not only men, but all natural bodies, plants, animals, nay whole countries, including every individual place and family, were under the government of some particular planet. As soon as the masters of the OCCULT SCIENCE had discov-

ered, by their tables, under what constellation the misfortune or distemper of any person originated, nothing further was required, than that he should remove to a dwelling ruled by an opposite planet, and confine himself exclusively to such articles of food and drink, as were under the influence of a different star. In this artificial manner, they contrived to form a system, or peculiar classification of plants, namely, lunar, solar, mercurial, and the like—and hence arose a confused mass of dietetic rules, which, when considered with reference to the purposes of health, cleanliness, exercise, &c. form a remarkable contrast to those of the Greeks.

Neither was this preventive and repelling method confined merely to persons suffering under some bodily disorder. In the case of individuals who enjoyed a good state of health, if an unlucky constellation happened to forebode a severe disease, or any other misfortune, they were directed to choose a place of residence influenced by a more friendly star; or to make use of such aliment only as, being under the auspices of a propitious star, might counteract the malignant influence of its adversary.

It was also pretty generally believed and maintained, that a sort of intimate relation or sympathy subsisted between metals and plants; hence the names of the latter were given to the former, in order to denote this supposed connexion and affinity. The corresponding metals were melted into a common mass, under a certain planet, and were formed into

small medals or coins, in hopes, and with the firm persuasion, that he who carried such a piece about his person, might confidently expect the whole favour and protection of the planet thus represented.

The transition from one degree of folly to another is easy; and this may help us to account for the shocking delusions practised in the manufacturing and wearing of metallic amulets of a peculiar mould, to which were attributed, by a sort of magic influence, the power and protection of the planet, to whom they related: these charms were thought to possess virtue sufficient to overrule the bad effects presaged by an unlucky hour of birth, to promote to places of honour and profit, and to be of potent efficacy in matters of commerce and matrimony. The German soldiers, in the dark and superstitious ages, believed, that if the figure of Mars, cast and engraved in the sign of the Scorpion, were worn about the neck as an amulet, it would render them invulnerable, and insure success to their military enterprizes: hence amulets were found upon every soldier, either killed in battle or taken prisoner.

But let us quit a subject which excites disgust, as it exhibits such glaring deviations from reason and truth. It is much more pleasant to dwell upon examples, which afford satisfactory proof, that the human mind has never been *entirely and universally* debased, and that there have always existed some individuals, though few in number, who would not submit their necks to the yoke of popu-

lar prejudice, and whose superior talents and virtues rescued them from the impositions of general folly or depravity. A memorable instance of this rare merit is to be found in the noble Venetian LEWIS CORNARO, whose history illustrates this agreeable and instructive truth, that nature, left to herself, or, in other words, a properly chosen mode of life and diet, regularly persisted in, will achieve great things; and that a frame, disordered and even reduced to a state bordering on the grave, may yet be re-established, and preserve its health and vigour for a great number of years.

Cornaro had been a professed epicure and libertine, till he entered into the fortieth year of his age. His constitution was so far reduced by the colic, rheumatic pains, fevers, &c. that his physicians at length gave him up, assuring him he could not survive much longer than two months; that no medicines whatever could avert this catastrophe, and that the only possible means of preserving his life would be a regular adherence to a frugal diet. He punctually followed this advice, perceived symptoms of convalescence within a few days after entering on his plan of reformation, and, after the lapse of twelve months, was not only completely restored, but found himself in a better state of health than he had ever been during any period of his life. He resolved therefore to confine himself to a still more parsimonious regimen, and to take nothing more than what he judged to be absolutely requisite for his support.

Thus, during *sixty* years, he confined himself to exactly twelve ounces of food a day, (bread and other nourishment included) with thirteen ounces of beverage. It should be also observed, that during this long period he carefully avoided violent heat, cold, passions, and extremes of every kind; and by rigidly and uniformly adhering to this moderate diet, not only his body, but his mind also, acquired so determined a tone, that no common incidents could affect them. At a very advanced age he lost a law-suit, which involved pecuniary concerns of great importance, and on account of which two of his brothers died of broken hearts; but he still retained his pristine health and tranquillity. His carriage happening on some occasion to be upset, he was dragged by the horses, in consequence of which his arms and legs were dislocated. He caused them, however, to be reduced again, and, without taking any medicines, we find him in a short time restored.

A striking instance of the dangerous effects likely to attend the slightest deviation from long custom and habit, is the following: When Cornaro had reached his eightieth year, his friends prevailed upon him to add a small portion to his daily quantum of food; alleging that his advanced age necessarily called for additional support. Although he was not convinced by this argument, being of opinion, that, with the general decrease of strength, our powers of digestion are likewise impaired, and that we ought to diminish rather than to increase our food, in pro-

portion to the decay of nature ; yet he yielded to the sollicitations of his friends, and increased his food from twelve to fourteen, and his drink from thirteen to sixteen ounces. “ Scarcely,” to quote the words of our dietic veteran, “ had I proceeded in this altered mode of living for ten days, before I found my spirits visibly affected ; a fretful, peevish temper succeeded to my former cheerfulness and gaiety, so that I became a burden to myself and others. This change of temper was followed by other symptoms still more alarming. On the twelfth day, I was attacked with a pain in my side, which continued for twenty-four hours together, and soon after found myself oppressed by a fever that raged with unabating fury for thirty-five days, so that my life was at times despaired of. By the blessing of God, however, on returning to my former regimen, I recovered from this shock, and now enjoy, in my eighty-third year, perfect health of body and serenity of mind. I can mount my horse without assistance ; I can climb steep precipices, and but lately I wrote a comedy, abounding with traits of innocent mirth and raillery. When I return home, after being engaged in my private affairs, or from attending the councils of state, I feel inexpressible satisfaction in the company of my grandchildren, eleven in number, whose education, amusement, and songs, are the comfort of my age. I frequently join them in singing, as my voice is now stronger and clearer than I ever knew it to be in my youth, and as my happiness is

not disturbed by the complaints, the moroseness, and discontented humours, so frequently the lot of intemperate old age."

In this happy frame of body and mind, Cornaro attained to his hundredth year; his virtuous and memorable example, however, has hitherto had but few followers. He found by *actual observation* and *experience*, that a strict and uniform regimen, or a regular daily allowance of food and drink, ascertained by weight, was the best method *he* could pursue, for the purpose of prolonging his life. He did not wish however to be understood, nor does it follow in general, that this or any other precise portion of nutriment is to be held out as a proper standard, by which *all persons* are to regulate their diet. His advice, that we should take no more food than what is absolutely necessary to our subsistence, may be thus explained; namely, that the restoration of strength, derived from supplies of nutriment, ought to bear an exact proportion to the losses sustained by the body. He, for instance, who spends little of his time in bed, and much in the open air, takes frequent exercise, is constantly employed in some laborious occupation, makes long journies on foot or horseback, or the like, will feel himself refreshed and strengthened after partaking of a plentiful meal, and cheering beverage; and such a repast is even indispensable to him, to recruit the sources of his muscular strength and activity. If, on the other hand, a person who lounges away half of his time in bed, or upon the sofa, were to consume a quantity of

food equal to the former, he would no doubt feel himself heavy and uncomfortable. Yet here too, the consequent loss of strength may vary in degree, in different sedentary persons; and this circumstance will afford me an opportunity, in the sequel, to apply to individual cases the doctrine suggested by the experience of Cornaro.

There was another period, during which *blood-letting* came into general use, and obtained great credit, as one of the most effectual means of prolonging life: the superfluity and vitiated state of the blood, or what physicians term a *plethoric habit*, being looked upon, at the same time, as a principal means of shortening life. Through the veins thus regularly opened, at certain seasons, the superfluous or vitiated blood was supposed to be emitted, while that of a more salubrious quality was left behind. Considered as a medical remedy, phlebotomy must certainly be allowed to possess its uses, and it is sometimes a necessary expedient, to produce an immediate diminution in the fulness of the blood, particularly when the time is too short, and the danger too pressing, to admit of any other method for effecting that purpose. As there can be no doubt, that blood-letting is an invaluable remedy in many disorders, it is the more peculiarly incumbent on the practical physician, to distinguish with care those cases, in which imminent danger may be averted, and health restored by the use of it. I am of opinion, that there are two cases, and only two, in which venesection is likely to be attended

with real advantage ; 1st, When it is required to prevent the fluids gaining access to the parts more essential to life ; and, 2dly, Where means must be speedily used, to counteract a threatened inflammation in the intestines. But, even in these two cases, the intelligent physician is at no loss for other remedies, which may be frequently administered with a greater probability of success. In the treatment of every disorder, it is necessary to single out that remedy, which is found most suitable to the stage of the complaint. And here we have no occasion to start the question, Whether the method and the means, by which the disease is checked and health restored, are, in the end, best calculated to prolong the life of the patient ? Physicians professionally look upon every disease as an evil, which cannot be too speedily removed ; and it would be to hazard the recovery of their patients, in many cases, were they to waste time in reflecting upon the consequences of the remedy with respect to its influence on the duration of life. Hence the art of prolonging life, strictly speaking, is not a distinct branch of medicine, but rather forms a separate art, and as such is the common property of all : it should therefore constitute a part of the education and studies of every rational individual, whatever be his other engagements and occupations. The absurd notion, that blood-letting is useful and necessary to the prolongation of human life, is still pretty generally received among the common people of all countries. Neither the *good* nor the *bad* days, supersti-

tiously marked in the almanacks for amusing the vulgar, can palliate or justify the mischiefs, with which this dangerous error is pregnant. Bleeding can be of service only, when it is performed at a proper time; and to express my opinion of it, in a few words, *it is always noxious to the healthy.*

The blood contains and affords to the bones, ligaments, tendons, membranes, muscles, nerves, vessels, in short, to the whole organized body, all the parts, which form the bones, ligaments, tendons, &c. Each of these parts is evolved from the blood, and adapted to its proper place, in so artificial a manner, that the human mind is totally at a loss to comprehend, how this operation is performed; neither have the researches of the most acute and attentive observers been able to account for it. And as the blood serves to replenish the diminution, and to make up the losses, which those parts occasionally sustain, it may be considered as the original source of our whole organization. By its stimulating powers it also causes the heart and the arteries to contract; and by that means preserves the circulating motion, by which it is propelled through all the parts of the body, for the purposes designed by nature.

Now, it requires little reflection to perceive, that he who wastes this vital fluid, thereby obstructs, and, as it were, cuts off the sources of his support and regeneration. And though it be true, that the blood evacuated by periodical bleedings is soon re-produced by the activity of the vital powers, yet this restora-

tion is not effected without considerable efforts, and at the expense of the whole machine. As this exertion, therefore, is a great pressure upon the vital powers, it must of course be attended with a proportionate degree of their consumption. It is too well known, that the corrupted part of the blood cannot be separated from the mass, so that the sound and uncorrupted particles alone may remain behind. If the quality of the blood ever become vitiated and diseased; if it be too thick and viscous, or too acrid, and dissolved, the whole mass participates in the infectious taint; neither is it in the power of art, to contrive any method, by which the corrupted part may be kept asunder, from that which is in a sound state. It would be equally unreasonable to expect, that a spoiled cask of wine could be cured of its tartness, by drawing or tapping the acid and corrupted portion from the top, and leaving the sweet and wholesome part behind. Lastly, experience has shewn in numberless instances, collected from different observations, that persons accustomed to frequent blood-letting are not only rendered more delicate in their constitutions, and thereby more subject to diseases, but also that they die, for the most part, at an earlier age than others; and although cases have occurred of some persons, who, having been bled twice or four times a year, have nevertheless arrived at a considerable age, they can only prove, that venesection was to them a proper medical remedy, perhaps adapted to their peculiar habit of

body ; or that the activity of their vital powers, their mode of life, and other favourable circumstances, internal and external, may have been sufficient to counterbalance the dangerous consequences, resulting from the frequent loss of this essential fluid.

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*On the Doctrine of Transfusion.*

AT a time, when the shortness of life was imputed to a distempered state of the blood ; when all diseases were ascribed to this cause, without attending to the *whole* of what relates to the moral and physical nature of man, a conclusion was easily formed, that a radical removal of the corrupted blood, and a complete renovation of the entire mass, by substitution, was both practicable and effectual. The speculative mind of man was not at a loss to devise expedients, or rather attempts, for effecting this desirable purpose ; and this undoubtedly was one of the boldest, most extraordinary, and most ingenious attempts ever made to lengthen the period of human life. I allude here to the famous scheme of *transfusion*, or of *introducing the blood of one animal body into that of another* ; a curious discovery, attributed to ANDREAS LIBAVIUS, Professor of Medicine and Chemistry in the University of Halle, who, in the year 1615, publicly recommended experimental essays to ascertain the fact. Libavius was an honest and spirited opposer of the Theosophic Sys-

tem, founded by the bombastic Paracelsus, and supported by a numerous tribe of credulous and frantic followers. Although Libavius was not totally exempt from the fashionable follies of that age, since he believed in the transmutation of metals, and suggested to his pupils the wonderful powers of *potable gold*; yet he distinguished rational Alchemy from the fanatical systems then in vogue, and zealously defended the former against the disciples of Galen, as well as those of Paracelsus. He made a number of important discoveries in Chemistry, and was unquestionably the first professor in Germany, who read Chemical Lectures, upon pure principles of affinity, unconnected with the extravagant notions of the Theosophists.\*

\* As this remarkable sect was founded upon the doctrines of Paracelsus, during the latter part of the sixteenth and the beginning of the seventeenth centuries; and as the society known by the name of Rosencrucians, or Rosencrucians, has not been without its followers and propagators, in different shapes, even to the present time, I shall here present the reader with a concise account of the origin and tenets of that fanatical sect.

We find this order first publicly announced to the world, in a book published in the German language, at Regensburg, in the year 1614, with the following title: "*The Universal and General Reformation of the World, together with an Account of the famous Fraternity of the Rosencrucians.*" In the work is an intimation, that the members of the society had been secretly at work, for a century preceding, and that they had come to the knowledge of many great and important secrets, which, if communicated to the world, would promote the happiness of man. An adventurer of the name of CHRISTIAN ROSENKREUZ is said to have founded this order, in the fourteenth century, after being previously initiated into the sublime wisdom of the East, during his travels in Egypt and Fez. According to what we can learn from this work, the intention of the founder, and the final aim of the society, appear to have been to accumulate wealth and riches, by means of secrets known only to the members; and by a proper distribution of these treasures among princes and potentates, to promote the grand scheme of the society, by producing "*a general revolution of all things.*" In their "*Confession of Faith*" are

The first experiments relative to the transfusion of the blood, appear to have been made, and that with great propriety, on the lower animals. The blood of the young, healthy, and vigorous, was transfused into the old and infirm, by means of a delicate tube, placed in a vein opened for that purpose. The effect of this operation was surprising and important: the aged and decrepit animals were soon observed to become more lively, and to move

many bold and singular dogmas; among others, that the end of the world is at hand; that a general reformation of men and manners will speedily take place; that the wicked shall be expelled or subdued, the Jews converted, and the doctrine of Christ propagated over the whole earth. The Rosencrucians not only believed that these events must happen; but they also endeavoured to accelerate the same by their exertions. To their faithful votaries and followers they promised abundance of celestial wisdom, unspeakable riches, exemption from disease, an immortal state of ever-blooming youth, and, above all, *the Philosopher's Stone*. Learning and culture of the mind were, by this order, considered as superfluous, and despised. They found all knowledge contained in the Bible: this, however, has been supposed rather a pretext to obviate a charge, which has been brought against them, of not believing in the Christian religion. The truth is, they consider themselves as superior to Divine Revelation, and believe every useful acquisition, every virtue, to be derived from the influence of the Deity on the soul of man. In this, as well as many other respects, they appear to be followers of Paracelsus, whom they profess to revere as a messenger of the Divinity. Like him, they pretend to cure all diseases, through *Faith* and the power of imagination;—to heal the most mortal disorders by a touch, or even by simply looking at the patient. The Universal Remedy was likewise a grand secret of the order, the discovery of which was promised to all its faithful members.

I think it unnecessary to enumerate any more of such impious fancies, if the founder of this still lurking sect, now partly revived, had not asserted with astonishing effrontery, that human life was capable of prolongation, like a fire kept up by combustible matter, and that he was in the possession of a secret, which could verify his assertion. It is evident, however, from the testimony of the above mentioned Libavius, a man of unquestionable veracity, that this doughty champion in Medical Chemistry, or rather Alchemy, Paracelsus, notwithstanding his vaunting assurances, died at Salzburg in Germany, in the Hospital of St. Stephen's, in 1541; and that his death was principally brought on by the irregular and dissolute mode of life, which he had for a long time pursued.

with greater ease and rapidity. By the indefatigable exertions of LOWER, in England, of DENIS, in France, and of MORITZ HOFFMAN, and others, in Germany, this artificial mode of renovating the life and spirits was successfully followed up, and even brought to some degree of perfection. The vein usually opened in the arm of a patient was resorted to for the purpose of transfusion; into this a small tube was placed in a perpendicular direction; the same vein was then opened in a healthy individual, but more frequently in an animal, into which another tube was forced in a reclining direction; both the small tubes were then slid into one another; and in that position the delicate act of transfusion was safely performed. When the operation was completed, the vein was tied up in the same manner as in blood-letting. Sometimes a quantity of blood was discharged from the patient, previous to the experiment taking place. As few persons however were to be found, who would agree to part with their blood to others, recourse was generally had to animals, and most frequently to the calf, the lamb, and the stag. These being laid upon a table, and tied so as to be unable to move, the operation was performed in the manner before described.

In some instances, the good effects of these experiments were evident and promising, while they excited the greatest hopes of the future improvement and progress of this new art. But the increasing abuses, to which it led bold and inexpert practitioners, together

with the great number of cafes, wherein it proved unfuccefsful, induced the different governments of Europe to put an entire flop to the practice, by the ftrictest prohibitions. And, indeed, fo long as the conftitutions of men differ from each other materially as they now do, this is, and ever will be, a hazardous, if not a desperate remedy. The blood of every individual is *fui generis*, or of a peculiar nature, and fuits or accords, as it were, with that body *only*, to which it belongs, and in which it is generated. Hence our hopes of prolonging human life, by artificial evacuations and injections, muft neceffarily be difappointed.

We are not however to fuppofe, that thefe and fimilar purfuits, during the times of which we treat as well as thofe which fucceeded, were folety or chiefly followed by mere adventurers and fanatics. No; the greateft wits and geniufes of thofe times, together with the moft learned and eminent men, deemed them objects worthy of their fedulous attention. LORD BACON, that fagacious explorer of the arcana of Nature, that luminary of fcience and talents, represents life as a flame, which is continually wafted by the furrounding atmofphere, and afferts that *all the fluids* of the body may from time to time be renovated, and require fuch renovation. The remedies, which he prefers and prefcribes, are conformable to this hypothefis. To prevent the *external* confumption produced by the circumambient air, he recommends the bath, and, after quitting it, friction with oils and falves, with a view

to fortify the pores, and exclude the influence of the external air. As means to counteract the *internal* waste of the body, he inculcates the propriety of a cooling, moderate diet, and, above all, extols the narcotic or soporific remedies, as the true balm of life, and the best adapted to attain the desired effect. Tranquillity of mind, and a cooling diet, may no doubt be very necessary in some cases, where there is too great an irritability of temperament, and where the circulation of the blood is too rapid. But to a phlegmatic habit, they will rather be injurious than serviceable. Narcotic remedies, too, are but ill qualified to cool and to moderate the body, since they never fail to act as a certain stimulus, are attended with heat and relaxation, and therefore must accelerate the consumption of the vital powers: that sleep, also, which is artificial, and which they have a tendency to procure, cannot upon the whole be salutary. It is no less evident, that the vital power supplied by heat or *caloric* (which is principally evolved from the air,\* and introduced into the body by means of respiration) must be much less considerable during sleep, than while we are awake.

For improving the fluids of the aged, and renovating the dry and corrupted part of them, Lord Bacon thinks nothing can be put in competition with powerful laxatives, and

\* We shall have occasion to institute a particular inquiry into the properties of *air*, in the next Chapter, from which it will appear, that one species of air is more noxious to the vital power than another, and that there is a greater consumption of it in one, than in the other.

advifes the ufe of a full courfe of them, every two or three years at leaft. Thefe remedies are, in his opinion, the beft qualified to evacuate vitiated humours, and afterwards to produce, in lieu of them, milder and more healthy juices. The exhausted, and, as it were, thirfty veffels may be replenifhed and ftrengthened, according to his ideas, by a refreshing and nourifhing diet.

However plaufible this theory may appear, the execution of it is impracticable, and the basis on which it refts, merely conjectural. If it were poffible to withdraw the corrupted part of the fluids from the body, by means of evacuants, and at the fame time to remove the *caufes*, which produce this tendency to corruption, then the doctrine laid down by Lord Bacon would deferve every praife, and the moft minute attention to its merits. But it ought to be obferved, that the activity and energy of *the whole* organized fyftem is indifpenfably neceffary in the procefs of feparating the noxious or ufelefs particles. As, therefore, laxatives remove only the more watery fluids; as they have a bad effect on the ftomach and intefines, by rendering them too irritable, and confequently lefs tonic or vigorous; as the bile, a fluid fo effential to the concoction of food and affimilation of alimentary matter, is thereby ufelefsly wafte; as the balance between the folid and fluid parts of the body is in this manner deftroyed; and as, upon the whole, the vital powers muft fuftain a confiderable degree of diminution in affording fupplies, to repair what is

lost ;—the precarious nature of *evacuants*, as the means of prolonging human life, appears too evident to require further illustration.

It is not, therefore, in such remedies as these, which can only be employed with safety, where a judicious attention is paid to the case and circumstances of the patient, that we ought to confide, as the most proper to prolong the period of our existence : we must search for means less dangerous and more effectual.

There is a pretty numerous class of men, who profess to calculate the length of their lives, not so much by the number of years or days they have lived, as by the use they have made of them, or, to speak more plainly, by the quantum of sensual pleasure they have enjoyed. Persons of this cast, though fully sensible of the unavoidable consequences, are not averse to what is called *fast living*. Accustomed to reckon only upon the enjoyments of life, they wish to attain these in a shorter period of time, and in more rapid succession, rather than slowly and by degrees ; especially as the duration of our life ever remains uncertain. Men of this sanguine character may be aptly compared to a plant forced in a hot-house, which will indeed grow up suddenly, but, if contrasted with a plant of slower growth, or any kind of fruit which gradually ripens to maturity, will be found much degenerated, neither possessing the solidity and strength of stalk, nor the astringent, aromatic, and other properties, in that vigour and perfection, which we find in vegetables

raised in the open air. Many similar hot-house plants are discoverable among men, in the different stages of society. In childhood, they display the premature acquirements of youth; in youth, they show the sense, ambition, and other qualifications of manhood; and before they have well passed through the prime of virility, they are either snatched away by untimely death, or their faculties become blunted and impaired.

It is the unalterable plan of Nature, to proceed, in every one of her operations, by degrees; all outrage and extravagance militate against her established laws. The *true* enjoyment of life does not consist in the hasty pursuit of pleasure, nor in the intemperate indulgence of our sensual appetites. The epicure is soon laid up by dangerous surfeit, resulting from indulgence in a variety of highly-flavoured dishes, and is obliged to spend that time in reluctant confinement, which he proposed to devote to his bottle, to his debauchery, or to some scene of gaiety; he is compelled to lead as it were a vegetable life, scarcely pitied by his friends, and, in the fullest sense of the word, to *exist* rather than to *live*.

In one respect, we have little occasion to extol our own enlightened age, at the expense of those which are so frequently and justly termed *dark*: I allude to the bold and artful designs of imposture, and particularly *medical imposture*. We daily see illiterate and audacious empirics sport with the lives of a credulous public, that seem obstinately resolved

to shut their ears against all the suggestions of reason and experience.

The host of empirics and mountebanks, to be found in our great cities, and the tinctures, essences, and balms of life, so much in vogue with even the polished classes; the celestial beds, the enchanting magnetic powers, lately introduced into this country by *Messmer* and his numerous disciples; the prevailing indifference to all dietetic precepts; the singular imposition practised on many females, in persuading them to wear the inert *acromatic belts* (which shall be further noticed in the eighth chapter); the strange infatuation of the opulent to pay *five guineas* for a pair of *metallic tractors*,\* not worth a sixpence; the tables for

\* The Monthly Reviewers, in examining Mr. Perkins's pamphlet on that subject, after having informed the reader that a Dr. Willard, an American practitioner, the author himself, and four other persons, had *purposely* burnt themselves with a red-hot piece of iron, so that blisters were raised, in order to *experience* the anodyne effects of the tractors, and that all these living witnesses obtained relief in a few minutes, proceed in the following words:

“ This zeal for knowledge is truly edifying, especially as the tractors are generously presented to the public at *only five guineas* a pair; and it is clear that one pair would suffice to cure all the burns and scalds of a large parish. Why are not such luculent experiments repeated here? If Mr. P. or any admirer of the discovery, would submit to have a red-hot poker run into some part of his body not necessary to life (into *that part where honour's lodged*, according to Butler, for example,) in any public coffee-house within the bills of mortality, and would afterwards heal the wound in presence of the company, in ten minutes, or in half as many hours, by means of the tractors, the most stony-hearted infidel could not resist such a demonstration. Why trifle with internal inflammations, when such an outward and visible sign might be afforded?”

“ Mr Perkins has taken some pains, in the first part of his pamphlet, to shew that the operation of his rods is not derived from animal magnetism. In our opinion, this is an unnecessary piece of trouble in England, where there is a constant succession of similar pretensions. The *virgula divinatoria*, and the *baguette* of the juggler, are the genuine prototypes of this mystery. We were indeed rejoiced on Dr. Perkins's account, to find that the Connecticut Society

blood-letting, and other absurdities still inserted in popular almanacks, sufficiently evince, that this is far from being the "Age of Reason;" that the Temple of Superstition is yet thronged with numberless votaries; that human reason is still a slave to the most tyrannical prejudices; and that there is no readier way to excite general attention and admiration, than to affect the mysterious and the marvellous.

The visionary system of JACOB BÖHMEN has lately been revived in some parts of Germany. The ghosts and apparitions, which have disappeared from the times of THOMAS and SWEDENBORG, have again, it seems, left their graves, to the great terror of fanaticism. New and unheard-of prophets announce their Divine mission, and, what is worse, find implicit believers! The inventors of secret medicines are rewarded by patents, and obtain no small celebrity; while some of the more conscientious, but less fortunate adepts, endeavour to amuse the public with *popular systems of medicine!* These, however,

had only denounced him as a *Mesmerist*; we trembled lest he should have been put into the inquisitorial hands of the old women, as a white witch.

"To trace the relations and dependencies of projects similar to that of Dr. Perkins, would now be a work of more labour than utility. The fund of public credulity is an inexhaustible resource for those who can resolve to levy contributions on it. In vain is the spirit of quackery exorcised in one form; it rises again immediately, *with twenty ghastly murders on its head, to push us from our stools.*" We, who have contemplated the progress of real knowledge, during a long course of years, have seen many bubbles like this glitter for a moment, and then disappear for ever. People may talk of *Mesmerism* or *Perkinism*; but we consider all such varieties as belonging to the old and extensive class, *Charlatanism.*"—*Monthly Review*, April, 1799, p. 463 and 464.

are harmless, in comparison with the daring experiments, of which I shall briefly sketch the history.

One of the most dazzling and successful Inventors in modern times was MESSMER, who began his career of Medical Knight-errantry at Vienna. His house was the mirror of high life; the rendezvous of the gay, the young, the opulent, enlivened and entertained with continual concerts, routs, and illuminations. At a great expense he imported into Germany the first *Harmonica* from this country; he established cabinets of natural curiosities, and laboured constantly and secretly in his chemical laboratory; so that he acquired the reputation of being a great Alchemist, a philosopher studiously employed in the most useful and important researches.

In 1766 he first publicly announced the object and nature of his secret labours:—all his discoveries centered in the *magnet*—which, according to his hypothesis, was the greatest and safest remedy hitherto proposed against all diseases incident to the human body. This declaration of Messmer excited very general attention; the more so, as about the same time he established an hospital in his own house, into which he admitted a number of patients *gratis*. Such disinterestedness procured, as might be expected, no small addition to his fame. He was, besides, fortunate in gaining over many celebrated physicians to espouse his opinions, who lavished the greatest encomiums on his new art, and were instrumental in communicating to the public a

number of successful experiments. This seems to have surpassed the expectations of Mesmer, and induced him to extend his original plan farther than it is likely he first intended. We find him soon afterwards assuming a more dogmatical and mysterious air, when, for the purpose of shining exclusively, he appeared in the character of a *Magician*—his pride and egotism would brook neither equal nor competitor.

The common Loadstone, or Mineral Magnet, which is so well known, did not appear to him sufficiently important and mysterious: he contrived an unusual and unknown one, to the effect of which he gave the name of '*Animal Magnetism*.' After this he proceeded to a still bolder assumption, every where giving it out, that the inconceivable powers of this subtle fluid were centered in his own person. Now the Mono-drama began; and Mesmer, at once the hero and chorus of the piece, performed his part in a masterly manner. He placed the most nervous, hysterical, and hypochondriac patients opposite to him; and by the sole act of stretching forth his finger, made them feel the most violent shocks. The effects of this wonderful power excited universal astonishment; its activity and penetrability being confirmed by unquestionable testimonies, from which it appeared, that blows, resembling those given by a blunt iron, could be imparted by the operator, while he himself was separated by two doors, nay even by thick walls. The very looks of this Prince of Jugglers had the power to excite painful cramps and twitches.

This wonderful tide of success easily instigated his indefatigable genius to bolder attempts, especially as he had no severe criticisms to apprehend from the superstitious multitude. He roundly asserted things, of which he never offered the least shadow of proof; and for the truth of which he had no other pledge to offer, but his own high reputation. At one time he could communicate his magnetic power to paper, wool, silk, bread, leather, stones, water, &c.—at another he pronounced, that certain individuals possessed a greater degree of susceptibility for this power than others.

It must be owned, however, to the honour of his cotemporaries, that many of them made it their business to encounter his extravagant pretensions, and to refute his dogmatical assertions with the most convincing arguments. Yet he long enjoyed the triumph of being supported by blind followers; and their too great number completely overpowered the suffrages of reason.

Messmer perceived at length, that he should never be able to reach, in his native country, the point which he had fixed upon, as the term of his magnetical career. The Germans began to discredit his pompous claims; but it was only after repeated failures in some important promised cures, that he found himself under the necessity of seeking protection in Paris. There he met with a most flattering reception, being caressed, and in a manner adored, by a nation which has ever been extravagantly fond of every thing new, whim-

sical, and mysterious. Mesmer well knew how to turn this national propensity to his own advantage. He addressed himself particularly to the weak; to such as wished to be considered men of profound knowledge, but who, when they are compelled to be silent from real ignorance, take refuge under the impenetrable shield of mystery. The fashionable levity, the irresistible curiosity, and the peculiar turn of the Parisians, ever solicitous to have something interesting for conversation, to keep their active imagination in play, were exactly suited to the genius and talents of the inventor of Animal Magnetism. We need not wonder, therefore, if he availed himself of their moral and physical character, to insure easy entrance to his doctrines, and success to his pretended experiments: in fact, he found friends and admirers, wherever he made his appearance.\*

\* His first advertisement was couched in the following high-sounding terms: "Behold a discovery which promises unspeakable advantages to the human race, and immortal fame to its author! Behold the dawn of an universal revolution! A new race of men shall arise, shall overspread the earth, to embellish it with their virtues, and render it fertile by their industry. Neither vice, nor ignorance, shall stop their active career; they will know our calamities only from the records of history. The prolonged duration of their life will enable them to plan and accomplish the most laudable undertakings. The tranquil, the innocent gratifications of that primeval age will be restored, wherein man laboured without toil, lived without sorrow, and expired without a groan! Mothers will no longer be subject to pain and danger during their pregnancy and child-birth; their progeny will be more robust and brave; education's now rugged and difficult path will be rendered smooth and easy; and hereditary complaints and diseases will be for ever banished from the future auspicious race. Parents will impart to them the activity, energy, and graceful limbs and demeanour of the primitive world. Fathers, rejoicing to see their posterity of the fourth and fifth generations, will only drop, like fruit fully ripe, at the extreme point of age! Animals and plants, no less susceptible than man of the magnetic power,

What splendid promises! what rich prospects! Mesmer, the greatest of philosophers, the most virtuous of men, the physician and saviour of mankind, charitably opens his arms to all his fellow-mortals, who stand in need of comfort and assistance. No wonder that the cause of Magnetism, under such a zealous apostle, rapidly gained ground, and obtained every day large additions to the number of its converts. To the gay, the nervous, and the dissipated of all ranks and ages, it held out the most flattering promises. Men of the first respectability interested themselves in behalf of this new philosophy; they anticipated, in idea, the more happy and more vigorous race to proceed, as it were by enchantment, from the wonderful impulsive powers of Animal Magnetism. Nay, even the French Government was so far seduced by these flattering appearances, as to offer the German Adventurer *thirty thousand livres* for the communication of his secret art. He appears, however, to have understood his own interest better than thus to dispose of his hypothetical property, which upon a more accurate investigation might be excepted against, as consisting of unfair articles of purchase. He consequently returned the following answer to the credulous French Ministers:—

will be exempt from the reproach of barrenness and the ravages of distemper. The flocks in the fields, and the plants in the gardens, will be more vigorous and nourishing, and the trees will bear more beautiful and luscious fruits. The human mind, once endowed with this elementary power, will probably rise to still more sublime and astonishing effects of nature:—Who indeed is able to pronounce, with certainty, how far this salutary influence may extend?

“That Dr. M. considered his art of too great importance, and the abuses it might lead to, too dangerous for him at present to make it public; that he must therefore reserve to himself the time of its publication, and mode of introducing it to general use and observation; that he would first take proper measures to initiate or prepare the minds of men, by exciting in them a susceptibility of this great power; and that he would then undertake to communicate his secret gradually, which he meant to do without hope of reward.”

Messmer, too politic to part with his secret for so small a premium, had a better prospect in view; and his apparent disinterestedness and hesitation served only to sound an over-curious public; to allure more victims to his delusive practices; and to retain them more firmly in their implicit belief. Soon after this, we find Messmer easily prevailed upon to institute a private society, into which none were admitted, but such as bound themselves by a vow to perpetual secrecy. These pupils he agreed to instruct in his important mysteries, on condition of each paying him a fee of *one hundred louis*. In the course of six months, having had not fewer than three hundred such pupils, he realized a fortune of *thirty thousand louis*. It appears, however, that his disciples did not long adhere to their engagement: we find them separating gradually from their professor, and establishing schools for the propagation of his system, with a view, no doubt, to reimburse themselves for their

expenses in the acquisition of the magnetising art. But few of them having clearly understood the enigmatic terms and mysterious doctrines of their foreign master, every new adept exerted himself to excel his fellow-labourers, in additional explanations and inventions : others, who did not possess, or could not spare the sum of one hundred louis, were industriously employed in attempts to discover the secret by their own ingenuity ; and thus arose a great variety of magnetical sects. At length, however, Mesmer's authority became suspected ; his pecuniary acquisitions were now notorious, and our *humane and disinterested philosopher* was assailed with critical and satirical animadversions from every quarter. The futility of his process for medical purposes, as well as the bad consequences it might produce in a moral point of view, soon became topics of common conversation, and at length excited even the apprehensions of Government. One dangerous effect of the magnetic associations was, that young voluptuaries began to employ this art, to promote their libidinous and destructive designs,

As soon as matters had taken this serious turn, the French Government, much to its credit, deputed four respectable and unprejudiced men, to whom were afterwards added four others of great learning and abilities, to inquire into, and appreciate the merits of the new discovery of animal magnetism. These philosophers, among whom we find the illustrious names of Franklin and Lavoisier, recognized indeed very surprising and unexpected phe-

nomena in the physical state of magnetised individuals; but they gave it as their opinion, that the power of imagination, and not animal magnetism, had produced these effects. Sensible of the superior influence, which the imagination can exert on the human body, when it is effectually wrought upon, they perceived, after a number of experiments and facts frequently repeated, that *Contact* or *Touch*, *Imagination*, *Imitation*, and *excited Sensibility*, were the real and *sole* causes of those phenomena, which had so much confounded the illiterate, the credulous, and the enthusiastic; that this boasted magnetic element had no real existence in nature; consequently that Mesmer himself was either an arrant Impostor, or a deceived Fanatic.

In the mean time, this magnetising business had made no small progress in Germany; a number of periodical and other publications vindicated its claims to public favour and attention; and some literary men, who had rendered themselves justly celebrated by their former writings, now appeared as bold and eager champions in support of this mystical medley. The ingenious LAVATER undertook long journies for the propagation of Magnetism and Somnambulism\*—and what manipulations and other absurdities were not practised on hysterical young ladies in the city of Bre-

\* *Somnambulism* is the art of exciting sleep in persons under the influence of Animal Magnetism, with a view to obtain, or rather extort, during this artificial sleep, their verbal declarations and directions for curing the diseases of body and mind. Such was the rage for propagating this mystical nonsense, that even the pulpit was occasionally resorted to, in order to make—not fair penitents, but fair profelytes to the system.

men? It is further worthy of notice, that an eminent physician of that place, in a recent publication, does not scruple to rank magnetism among medical remedies! Yet it must be confessed, that the great body of the learned, throughout Germany, have endeavoured, by strong and impartial criticism, to oppose and refute Animal Magnetism, considered as a medical system. And how should it be otherwise, since it is highly ridiculous to imagine, that violent agitations, spasms, convulsions, &c. which are obviously symptoms of a diseased state, and which must increase rather than diminish the disposition for nervous diseases, can be the means of improving the constitution, and ultimately prolonging human life? Every attentive person must have observed, that too frequent intercourse between nervous and hypochondriac patients is infectious; and, if this be the case, public assemblies for exhibiting persons magnetised can neither be safe nor proper. It is no small proof of the good sense of the people of this country, that the professors of this fanatical art could not long maintain their ground; that they were soon exposed to public ridicule on the stage; and that the few who are still left, are banished to dark alleys and obscure cellars of the metropolis.

Some other plans for the prolongation of life deserve to be mentioned, though scarcely less absurd than the preceding.

The French Count of ST. GERMAIN made large sums, by vending an artificial Tea, chiefly composed of Yellow-Saunders, Senna-leaves,

and Fennel-seed ; puffing it off by the specious name of *Tea for prolonging life*. It was once swallowed with great avidity all over the continent ; but its celebrity was short-lived, and its promised beneficial effects were never realized.

Another impudent adventurer, the *Chevalier D'AILHOU*D, presented the world with a Powder, which met with so large and rapid a sale, that he was very soon enabled to purchase a whole *Comté*. Instead, however, of adding to the means of securing health and long life, this famous powder is well known to produce constant indisposition, and at length to cause a most miserable death ; being compounded of certain drugs, which are clearly of a poisonous nature, although slow in their operation. And yet there are on the continent, even to this day, several respectable families, who persist in the use of this deleterious powder, from an ill-judged partiality for its inventor.

COUNT CAGLIOSTRO, that luminary of modern Impostors and Debauchees, prepared a very common stomachic Elixir, which he sold at an enormous price, by the name of "*Balm of Life* ;" pretending, with unparalleled assurance, that by the use of this medicine he had attained an age exceeding 200 years, and that he was thereby rendered invulnerable to all attempts by poison. These bold assertions could not fail to excite very general attention. During his residence at Strasburg, while he was descanting, in a large and respectable company, on the virtues of his an-

tidote, his pride was mortified by a severe check. A Physician who was present, and had taken part in the conversation, quitting the room privately, went to an Apothecary's shop, where having ordered two pills to be made of an equal size, and agreeably to his directions, he suddenly appeared again before Cagliostro, and addressed him as follows: "Here, my worthy Count, are two pills; the one contains a mortal poison, the other is perfectly innocent; choose one of these, and swallow it, and I engage to take that which you leave. This will be considered as a decisive proof of your medical skill, and enable the public to ascertain the efficacy of your extolled Elixir." Cagliostro took the alarm, made a number of apologies, but could not be prevailed upon to touch the pills. His opponent swallowed both immediately, and proved by his Apothecary, that they might be taken with the most perfect safety, being only made of common bread. Notwithstanding the shame of this detection, Cagliostro still retained numerous advocates and partisans, by circulating eccentric notions, and concealing his real character by a variety of tricks.

The inspired FATHER GASSNER, of Bavaria, ascribed all diseases, lameness, palsy, &c. to diabolical agency, contending from the history of Job, Saul, &c. recorded in Sacred Writ, that Satan, as the grand enemy of mankind, has a power to embitter and shorten our lives by diseases. Vast numbers of credulous people flocked to this fanatic, for the purpose of obtaining relief. Whole cargoes

of patients, afflicted with nervous and hypochondriac complaints, besieged him as it were in his quarters every day; all stimulated and heated with a wild imagination, all eager to view and to acknowledge the works of Satan! Men of literary character, even the Natural Philosophers of Bavaria, were hurried away by the stream, and completely blinded by this sanctimonious Impostor.

It is no less astonishing than true, that in the year 1794, a COUNT THUN, at Leipzig, pretended to perform miraculous cures on gouty, hypochondriac, and hysterical patients, merely by the imposition of his sacred hands. He could not, however, raise many disciples in a place, that abounds with Sceptics and Unbelievers.

It would be trespassing too much on the limits I have proposed to myself, were I to enumerate the various remedies advertised in the daily papers, both British and foreign, under the fictitious and fraudulent pretence of prolonging life. I shall therefore only remark, in general, that all these celebrated specifics are obviously composed upon wrong principles; inasmuch as their inventors proceed on the hypothetical idea, that *disease is the only cause of shortening life*; and, being thus mistaken, it is no wonder that they carry the *strengthening* or *bracing* system to an extravagant degree.

The highest point of bodily vigour and health may of itself contribute to shorten life; although no external causes should appear as co-operating to hasten the consump-

tive process. Nay, the very remedies we use, and the regimen we attend to, for the prevention or cure of diseases, may be of such a nature as to promote that consumption.

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*Absurdity of Specific Remedies.*

FROM the doctrines now laid before the reader, I hope I shall not be thought unreasonable, in drawing this conclusion:—That the plans for prolonging human life are generally erroneous and injudicious; that all *artificial* means have rather a tendency to shorten than to prolong it; and that we can never safely expect the accomplishment of this great object, unless we pursue methods more consonant to nature, more verified by experience.

The truth of this inference will be more evident, when we come to inquire into the *conditions*, which are essentially requisite to the attainment of a long life.

The *first* of these is a certain bodily and mental disposition to longevity, not easily defined, yet sufficiently known and understood. In whatever this disposition may consist, it is a matter of astonishment, and inexplicable by the laws of animal economy, that many individuals, frequently under the most unfavourable circumstances, and in the most unwholesome climates, have attained to a great and happy age. It may indeed be confidently affirmed, that, without this principal requisite, all other

advantages are often of no avail; the most salubrious country air, a district abounding with aged inhabitants, a rigid adherence to the diet of Cornaro, a regular course of exercise and recreations, with the best art of the physician, are not alone sufficient to insure the felicitous prospect of a long and healthy life.\*

*Secondly*: It is certain that there is, in most cases, a sort of hereditary disposition to longevity; an innate principle or quality, which, like many family diseases, is propagated from one generation to another. Perhaps nine out of ten old persons could make it appear, that their parents and ancestors also lived to a great age; a reason which may be admitted without having recourse to any material substance, as the cause or effect of this inherent virtue.

The *third* requisite to longevity is a *perfect birth* of the child, and a proper subsequent conduct in the mother; upon which subject it is not my intention to expatiate in this place. That acute physiologist, Lord Bacon, somewhere remarks, "that children partake more of the nature of the mother, the longer

\* If these rational means be unavailing to insure longevity, still more so are those miraculous remedies introduced by superstition. The ancients conceived the idea of a *principle of life*, which they compared to a radical fluid;—the Alchemists expected to find this *original entity* in gold, by the use of which they pretended that the human body might acquire the solidity and durability of that metal. Others traced the germ of life in bodies of considerable duration; in plants and animals; in the wood of the Cedar, and in the flesh of the Stag. BOERHAAVE has made a facetious remark upon the subject: "This notion," says he, "is just as ridiculous as that of the man, who, in order to prepare himself for the business of a running footman, is said to have lived for some time entirely on the flesh of hares; hoping thus to surpass all his fellows in agility."

time she has nursed them; and that those children which most resemble the mother, will be generally found to have a claim to longevity."

*Fourthly*: A gradual, and not too precipitate culture of the physical and mental faculties may be properly considered as an excellent preliminary step towards prolonging life. The age of man bears a certain proportion to the growth of his various powers; and the longer we can protract the different stages of life, the more extended will be the whole compass of our existence. As it is evidently the design of nature, that man should live longer than most of the lower animals, he of course requires a greater space of time, to develop the faculties both of mind and body. Animals, which arrive soon at the perfection of their nature and form, live but a short time. Man requires upwards of twenty, and according to some, twenty-five years, before he attains to full maturity; and if it be a rule of nature, that animals in general live eight times the number of years, which is requisite to the attainment of their perfect growth, a strong presumption arises, that the age of man might be extended to nearly two hundred years. In the works of the illustrious Bacon, and particularly in his "Historical View of Life and Death," are given many strong arguments to confirm this assertion. Surprising as it may appear to some, there is a possibility at least, if not a probability, that the term of human life might be still further extended, if mankind could by any means be persuaded to re-

turn to that primeval state of nature, from which history and tradition have furnished us with such astonishing and almost incredible instances of longevity. It is not my intention here to inquire into the degree of credit, which may be due to the accounts of some extraordinary facts of individual longevity, recorded by the sacred historian; as the learned vary much in their opinion, relative to the mode of computation, and whether the Solar, the Arabic, or the Lunar year, or a still shorter measure of time, is alluded to. This, at least, seems to be generally admitted, that the antediluvians enjoyed an enviable, uninterrupted state of health; that their vegetable aliment, and general mode of living, were extremely simple and no wise prejudicial; that the constitution and temperature of the globe itself must have been greatly affected and deteriorated, in consequence of the Flood, or other causes of which we are ignorant; and, lastly, that those impetuous and inordinate appetites and passions, which, like flames, may now be said to consume the powers of life, were then either less violent, or exerted their baneful influence at a much later period of life.

Nature resents every outrage committed on her treasures, and seldom fails to punish the transgressors with lingering disease, or early dissolution. This observation may be applied to the moral as well as the physical faculties of man. It is commonly said, and not without some degree of truth, that very forward

children seldom live to any age; and that too early an exertion of mental powers is in most cases destructive. The same remark holds good in what relates to the body. The inhabitants of hot climates, who frequently marry at the age of ten and twelve, or twelve and fourteen, begin to be old at thirty, and rarely survive the sixtieth year. Every thing which hastens the evolution of the natural powers, every exertion of strength, disproportionate to the ability of the individual, should be carefully avoided, as of a dangerous tendency. Hence the great art of education, the great art of living, consists in following the path of nature.

*Fifthly*: We should constantly inure ourselves to the habits of supporting and resisting the various impressions of external agency.—Some persons who have paid a very rigid attention to diet, have notwithstanding been unable to reach even a middling age; while others, who have been addicted to the most irregular and extravagant courses, have been observed to live to one very advanced. Hence arise contradictory maxims in dietetics, which can only be reconciled by deciding chemically between the two extremes, and ascertaining pretty nearly the absolute and relative salubrity of things. All deviations from the rules of diet are in a certain degree hurtful; although these may, in most cases, have only a limited value. Many epicures have been known to reach their seventieth and eightieth year, if they have once survived a certain

critical period of their lives.\* As soon as the body becomes accustomed to the use of certain things, at first disagreeable and perhaps hurtful, the noxious tendency will not only be removed, but we shall find our frame hardened and strengthened by the habit of using them. Nature must stand many a shock, if she would familiarize herself to the vicissitudes of climate and opposite modes of life, but every victory she gains in these encounters, will be a means of rendering her more vigorous and unconquerable. How could the sublime mind of FREDERIC THE GREAT have remained so long in its earthly vehicle, if he had not improved, by constant culture and discipline, his original disposition to a long life? A thousand other men, who have endured as much exercise of body and exertion of mind in their younger years, have yet not attained to any remarkable age.—Severe and obstinate diseases have also been thought, in many instances, to contribute to the prolongation of life: this is at best, however, but a doubtful point; although it cannot be denied, that many sick persons have, to all appearance, acquired additional

\* Experience shows, that there is a particular term of life which, if we can pass in the fullness of health and vigour, leaves the greatest probability of living to a considerable age. In the female sex, this period generally arrives at, or before, the fiftieth year; in the male, it is about the sixtieth year. GELLIUS, a medical author of credit, asserts, from observations founded on long experience, that the sixty-third year is, to most constitutions, a critical and dangerous one.—The Egyptians called this epocha *Androctos*, because man begins from that time to experience a rapid decay of strength and energy. Others, rather more superstitiously, maintained that, about this period, many individuals die, or at least are subject to severe attacks of disease.—The Emperor AUGUSTUS received the congratulations of his friends, on having survived this trying period.

Strength and spirits, after having recovered from a distressing quartan ague, or some threatening pulmonary disorder.

*Sixthly* : We may take notice of a certain *steady and equal progress through life*, as highly conducive to the great object in view, whether it flows in the manner of a gentle stream, or resembles the more active course of a rapid river. The mind, when accustomed to certain situations and pursuits, which almost constantly affect it in an uniform manner, is most likely to preserve its reasoning powers unimpaired and strong. He whom neither violent joy convulses, nor deep melancholy corrodes, whose drama of life is not chequered by too sudden vicissitudes, may, with some probability, expect a long enjoyment of that life, to which he has become so habituated. There are many whose days quietly glide away, like those of a simple rustic, in continual sameness : such persons, it is observed, generally live to a great age.

*Seventhly* : A very necessary cause of the attainment of an advanced age, is a sound state of digestion. In very old persons, we generally find the digestive organs in excellent condition ; nor is there a surer symptom of approaching dissolution, than complaints in the stomach, or frequent returns of indigestion. The Swiss are indebted, it is thought, to the vigorous tone of their digestive powers, for the long preservation of their lives, in general, and for the great number of aged persons among them. Milk and vegetable food seem remarkably well adapted to invig-

orate the stomach. To effect the same purpose, Lord Bacon advises old people to have recourse to strengthening baths, fomentations, and similar *external* remedies, which operate upon the absorbent system. At the same time, a thin but nourishing and moderate diet should be observed, in order to spare the organs of digestion.

*Eighthly*, and lastly: We may recommend equanimity, or that state of the mind, when, from the happy nature of its pursuits, it is not disquieted by too violent exertions. In the literary professions, and particularly among such individuals as are placed in easy circumstances, we discover as many instances of longevity, as in the more laborious occupations. It was remarked by the Ancients, that grammarians and rhetoricians commonly attained a great age. The mind being engaged in scientific pursuits, and other objects in which it finds pleasure, such as conversation on literary and mixed topics, collecting the productions of nature, a continual series of mental research, diversifying the pursuits or amusements, yet gradually and constantly persevering in exertions towards the attainment of some principal object—all supply the vital power, as it were, with materials, like the cuse of oil, which proved a never-failing support to the widow of *Sarepta*. On the other hand, it is a general remark, that deep thinkers, speculative philosophers, and those whose powers are continually absorbed in abstruse inquiry, soon feel the effects of age, from the great exertions of their mental powers. This must

be understood, however, with exceptions, as in the cases of SIR ISAAC NEWTON, HALLER, EULER, and the pride of his nation and age, the profound and venerable KANT, still living at Kœnigsberg.

I venture to say thus much on the various rules and precautions requisite to attain a long and healthful life. Some of the particulars are, no doubt, found united in a certain proportion of the individuals, who arrive at a respectable age. It is commonly remarked also, that the inhabitants of mountainous countries, for the most part live to a greater age than those of plain and, particularly, marshy districts. This is in part true; yet we are not to consider the lofty regions in the Alps and Pyrenees as possessing these salubrious qualities; for it is only upon moderate heights, and in hilly rather than mountainous countries, that we so frequently meet with people of an unusual age. Persons who are constantly travelling, are likewise said to enjoy a long and healthful life; and Lord Bacon further includes, in the list of long livers, such as are of a melancholy temperament. It is a questionable point, whether the great age of many Turks is to be ascribed to the serenity of their climate, their daily use of the bath, or their uncommon temperance in eating and drinking. For, as to their copious use of opium, which is considered by them almost as necessary as food, we have already shown the noxious tendency of such practice; opium generating, in a remarkable degree, a disposition of the fluids, in many respects resembling

that of hypochondriasis. There is scarcely an instance of any person, that has attained to uncommon longevity, who has not been particular in his diet and manner of living. But in this respect we cannot hope to derive advantage from excessive sollicitude:—for, as when in want of sleep, the more we think of it, the more it shuns us; so those who are most anxious for longevity, are the least likely to attain it. Age is a gift, which Heaven frequently bestows upon mortals, when they are asleep, or in other words, when they are scarcely sensible of it!

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*On the Symptoms of actual Dissolution.*

THAT many unfortunate individuals are consigned to the grave, before they are actually dead, is a truth too well attested to require demonstration. If this were not, or never had been the case, it could not have excited that degree of attention on the Continent, and particularly in Germany, which of late years has been bestowed on this important subject. The most respectable Physicians have proved by incontrovertible facts, that sick persons have often been hastily buried, or to speak more properly, smothered in their coffins, either from accidental mistake, or from the most detestable motives. But, as many false and scandalous reports are generally circulated, in addition to those founded on truth, we need not wonder, that this business has

not been conducted, hitherto, with that degree of calm and patient attention, to which it is justly entitled. Houses for the reception of persons apparently dead have been, at length, erected in various parts of Germany, in Berlin, Jena, Coburg, &c. This idea, at the first view of it, may to some appear whimsical; but those who know the extent of the power of vitality, and the almost infinite modifications of which that power is susceptible, will not ridicule a proposal, which originated in motives of prudence and humanity. Into these houses every inhabitant of the town, or district, has a right to send the body of a deceased person, on paying a trifling sum per night, towards the expenses of the institution. Here the body is deposited on a couch, lightly covered, and provided with a string fastened to the hand, which pulls a bell on the top of the house. A watchman is appointed to receive and register the bodies brought into the house, and to give the alarm, if necessary. This, to say the least of it, is no small convenience to families in a large city, crowded into narrow apartments, with a number of children, who must necessarily suffer from the pestiferous exhalations of dead bodies. But this is not the principal advantage attending such establishments: it is unquestionably a great satisfaction to the relatives of the deceased, to be assured that every means have been used to preserve from the most dreadful of all deaths, a friend whose memory they revere.

The cases, in which death can be clearly ascertained, are nearly the following :

1. When putrefaction has actually taken place over the whole animal frame ; as instances are common, in which a partial mortification of an arm or a leg is by no means mortal.

2. In the nervous apoplexy of the aged ; as such persons generally die in consequence of slowly wasting disorders, various species of palsy, &c.

3. If the patient expires after a long standing consumption, hectic fever, or ulcerations of the breast and lungs, diseases now very common.

4. If any of the larger blood-vessels, or other parts essential to life, have received external injury, by violent blows, bruises, or cuts, attended with great loss of blood, which could not be stopped by artificial means. If we are unable to supply the loss of this vital fluid, and to restore the organization of the parts thus destroyed ; particularly if the brain, the lungs, the heart, the stomach, or any of the intestines, have suffered from a severe wound, a speedy dissolution may be considered as inevitable.

5. After chronic disorders of the intestines, obstructions of the abdominal vessels, and dropsy thence arising—or if an incurable weakness in the breast has occasioned the organic destruction, or ossification of the pectoral vessels, there is little prospect of the recovery of such a person ; as these complaints of asthmatic sufferers, in general, are not in a

just proportion to the whole state of the body ; for instance, if their appetite and digestion have been unimpaired previous to their disease, or if their muscular strength has not suffered from the like affections.

6. In persons of tender and debilitated nerves, who have been long subject to spasms or epileptic fits, particularly if they die in child-bed, in consequence of violent hemorrhages, or after repeated and oppressive agitations of mind ;—in such cases there is no hope left, as it is too late to think of changing or improving the constitution of the nervous system. Lastly,

7. If a person gradually wastes away in a malignant nervous or putrid fever, or after long fasting from want of food. In these instances it is not in the power of the medical art to restore the shrivelled vessels to their proper tension and energy ; consequently all our efforts to reanimate the body will be unavailing.

There remains now to be stated also, in what cases and situations the symptoms of apparent death are less certain, so that some hope of recovery is still left to the disconsolate friend and relative. These are principally the following : after faintings, sudden loss of blood from diseased intestines,—in certain cases of repelled morbid matter, for instance, in the small-pox, measles, poisons, and the like, which frequently produce a spurious kind of apoplexy ;—after hysteric and hypochondriac spasms and colics of a transitory kind, which have not too often recurred ; af-

ter mental anxiety, perturbation, terror, and other oppressive passions, where every thing depends on a speedy removal of the causes. To this list we may likewise add the cases of drowned, hanged, and otherwise suffocated persons, or those who appear to be dead, in consequence of a fall from high scaffoldings, without any external injury. In such accidents, an internal pressure or stoppage of the vital functions, as breathing, and circulation of the blood, often produces a state of apparent death.—Even the suppressed pulse in the arteries, imperceptible respiration, the coldness and rigidity of the limbs, the want of contractibility in the pupil of the eye, the involuntary loss of excrementitious substances,—all these symptoms of approaching dissolution should not discourage us from trying the proper means of recovering the patient's life. In children and young persons, in particular, we must not too hastily decide, whether they be absolutely dead or not;—*teething* is frequently attended with diversified convulsive symptoms, and the *tape-worm* is capable of producing the most alarming effects, which the inexperienced by-standers may unwarily ascribe to very different causes. Hence every possible degree of precaution is requisite in managing the bodies of infants apparently dead, and above all things not to remove them from the warm temperature of the sick-room, before the last lingering spark of life is extinguished. Indeed, it must strike even superficial observers, that the hasty removal of a body from a warm to a colder temperature

is highly improper and dangerous. And here the excellent rules, published by the Royal Humane Society of London, for the recovery of persons apparently dead, cannot be recommended in too strong terms; although some of the more violent methods detailed in their plan, such as inflation of the bowels with the *fumes* of tobacco, *clysters* prepared of this herb, violent *agitation*, and too *early* and *indiscriminate* application of the *electric shock*, might well bear a few modifications and improvements.

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#### *Summary of Dietetics.*

THE knowlede of those objects which relate to the preservation of the human body, in its natural state, may be called the *Doctrine of Health*. Life and Health are, therefore, the proper objects of this doctrine; as the second department of Medicine solely relates to the preternatural states of man, viz. Disease and Death, and forms that branch of professional study, which we call '*Pathology*.'

The compass of the former science, or an investigation of the objects included in the doctrine of health, must be very extensive. It furnishes us with rules and cautions as to every thing we ought to do, or to avoid, in order to remain healthy. This useful science is properly denominated DIETETICS, or a *systematic view of all objects relative to health in general, and to food and drink in particular*.

The following Chapters will, therefore, be exclusively devoted to Dietetics. My principal object will be, to lay a solid foundation for that important science, by investigating and combating the chief prejudices, which have hitherto retarded the progress of this branch of knowledge. Hence, a *System of Dietetics* must not only contain all those rules, which are requisite to guide us in the preservation of health, together with such as relate to the choice of a proper mode of life, but should likewise inform us with regard to the beneficial or hurtful influence, which *external objects* produce on the health and life of man, and teach us the just application, or practical use, of these objects.

DIETETICS include the whole of what the Ancients understood by the singular name of the SIX NON-NATURALS; namely, *Air, Aliment, Exercise and Rest, the Passions and Affections of the Mind, Wakefulness and Sleep, and Repletion and Evacuation*. Although these general heads do not comprise, strictly speaking, every thing that relates to the different functions of the human body; yet they contain all such conditions of life, as are absolutely necessary, and the greatest part of those circumstances, which are connected with the health and well-being of the individual. In each of these particulars we are liable to commit errors, either by intemperate use, or an improper application. I propose, therefore, to lay down a System of Rules, by which we may be assisted to choose, according to particular circumstances, the best and most ra-

tional means of insuring health, and of avoiding whatever may have a contrary tendency.

Our mode of life is no longer that natural and simple one, which prevailed in the primitive ages of mankind: in the present state of society such habits are scarcely conceivable. Man in a state of nature had little occasion to attend to his health; he wanted no rules for the preservation of it; for, as the seeds of diseases are rarely scattered in such a state, instinct would be to him in most cases a sufficient guide. It now seems to be impossible to return to that primeval state, without returning, at the same time, from our present degree of mental improvement to that of pristine barbarity. We have, to all appearance, purchased our improved state of mental culture, by sacrificing to it a considerable share of our bodily welfare;—happy, however, we may still consider ourselves, if we have actually gained in moral and intellectual improvement.

Innumerable are the causes, which have conspired to render the *true* knowledge of the means conducive to health, difficult in the acquisition, and uncertain in its application. The chief of these are probably the following, which include most of the subordinate particulars:—the present very artificial method of living; the prodigious number of the employments of mankind; the different modes of dwelling and dressing; the endless variety of articles used as food and drink; the great diversity of national customs and manners; and the difference of climate and situation:—

all these circumstances have greater or less influence, conjointly or separately, not only on the passions, inclinations, and instinctive desires of individuals, but also on the general state of the health and physical welfare of a people. By the present mode of living we are exposed to diseases wholly unknown in the first ages of the world, and we suffer from a variety of complaints, originating either in artificial habits, or the constraint under which we labour, in consequence of blindly complying with the caprices of custom, or fashion, without perhaps apprehending any ill consequences from such pernicious practices.

Many ingenious writers have lately endeavoured to point out the disadvantages arising from causes apparently trivial. Thus the fashion of using paint, hair-powder, and pomatum; of wearing ill-shaped shoes, laced stays, &c. have deservedly incurred severe ridicule and pointed censure. The custom of applying lead to earthen vessels has not escaped their attention: the danger, however, resulting from the use of that substance, has been greatly exaggerated. Writers, with the best intentions, have sometimes, from an excess of zeal, descanted on the worst side of the question only, by attributing to certain things many dangerous qualities, which in fact are owing to a great diversity of circumstances.

This partial method of inquiring into the sources of the evil, is, generally speaking, a serious error; as it not only leads to false conclusions, but also draws our attention from other pressing injuries, to which, in a more

dispassionate state of mind, our care might be directed.

Many, and perhaps the greater number, of dietetic writers have fallen into another error of an equally bad tendency. They judge of every thing, according to the agreeable or disagreeable effect it produces on their own palates and constitutions, and hence recommend their favourite articles to others; although what is salutary in particular cases, may have a pernicious tendency, if prescribed indiscriminately.

The multiplicity of our wants, all deserving attention in a Dietetic System, has also considerably multiplied the rules of health. Of all living beings, indeed, none require such rules more than those, who servilely submit to the arbitrary mandates of luxury and fashion.

Many are the open and secret enemies to the health and prosperity of man. Even the most healthy, and those who rigidly adhere to the rules of Diet and Regimen, cannot altogether evade their attacks. Hence we should make it our study, to acquaint ourselves minutely with every thing, so as to be enabled to judge of its good or bad qualities. Whatever we are obliged to have more immediately about and around us, ranks in this class: the arrangement of our dwelling places, beds, clothes, furniture, &c. in the choice of which we are less accustomed to consult what nature requires, or to contrive what may be most likely to promote the welfare of the body, than to follow fashion, vanity, or our own habits.

Some of our organs of sense, and other faculties of the body, must unavoidably suffer from inattention to a proper mode of living in general. From the great exertions, to which we often subject them (the eyes, for instance, in reading) they are liable to a variety of accidents, and frequently become debilitated and impaired. It appears, therefore, perfectly consistent with the plan of this work, to treat of the management of the eyes, teeth, and other individual parts of the body.

In a complete System of Rules for preserving the health of man, attention must be paid to the separate wants of individual constitutions; provided they be not too minute and trivial. Such a system must contain more than what relates to the first and most simple rules of living;—its precepts must not apply to the healthy alone, or those whose life is regulated by the simplicity of nature,—it should also lay down instructions, how, in all contingent circumstances, we may be secured from danger and bodily injuries. It is not, however, proposed to treat of diseases after they have taken place, if the removal of them requires any thing more than a strict adherence to temperance, and the other rules laid down in these Lectures.—But to prevent any misapplication of those rules which are established by the accumulated observations of ages, it may not be improper to introduce here some previous *general remarks*, relative to the individual use and advantage to be derived from a connected view of *Dietetics*.

It may be laid down as a preliminary observation, that the rules contained in this work are not to be considered as strictly applicable, in every instance, to the particular situation of any individual, or as essentially necessary to the preservation of his health.— It is not so much the healthy, as the valetudinary and infirm, who stand in need of minute precepts for their conduct; and even the latter ought not to engage too solicitously in their compliance with them; since it is only a very limited number that require such accurate attention.

A vigorous and persevering method of inuring ourselves to the unavoidable difficulties and diversified accidents of life, is of greater importance to the preservation of health, than any dietetical rules whatever. Man is capable of undergoing all the vicissitudes and inconveniences of air, weather, and climate; he can digest any articles of food, if his stomach has not been wantonly indulged; he can sustain the severest bodily exercise and labour, without paying too minute attention to time or regularity, when his employment or duty renders exertion necessary. But he who from his infancy has been treated with extreme tenderness, or who, after having been previously accustomed to a hardy mode of life, is seized with the whim of bestowing too much care on his health, will suffer from the most trivial hardships, and catch cold at every change of the air; every heavy or high-seasoned dish will be oppressive, and the smallest deviation from the rules of temperance indis-

pose him. Yet, by the same rules, every healthy person will learn, that the grand secret for preserving himself in that state, consists principally in the art of moderating his desires and enjoyments. We may thus arrive at the knowledge of such things, as are *generally* conducive to the welfare of the body; and more than this ought not to be expected. Rules of health, *universally* applicable to the state of every individual, are not discoverable in nature; nor can they be derived from any experimental knowledge we possess of corporeal objects.—The best general precept is, that every one study himself, and his own particular constitution; that he choose and regulate his mode of life accordingly; and that he make his own experience his guide in whatever he finds most suitable and convenient.

## C H A P. II.

*Of AIR and WEATHER; their influence on the Human Body; the means of improving the former, and diminishing the pernicious effects of the latter.*

*Of Air in general.*

AS soon as an infant enters into the world, the air of the atmosphere penetrates into his lungs, filled up till then with aqueous mucus, and renders them fit for the circulation of the blood, which immediately commences. From that moment the alternate extension and contraction of the breast and lungs, the inspiration and expiration of the air, or in other words, the function of *respiration*, becomes indispensably necessary to the preservation of animal life. While the child remained within its mother, it required no external air. As soon, however, as it has drawn breath, as soon as the lungs are opened, the act of respiration begins, is constantly renewed through life, and can never absolutely cease, but with death. As, therefore, air is the principal medium by which animal life is supported, it becomes highly important to acquire correct ideas of this refined substance, that pervades all the parts of animate and inanimate matter, and is so essential to man, for the preservation of both his life and health.

*Air* is that colourless, transparent, compressible, heavy, and elastic fluid, which every

where furrounds our globe, and which generally receives the name of *Atmosphere*.\* This ambient matter, in its common state, is combined with a great variety of foreign ingredients. It contains *water* in a state of solution; by means of water it combines with salts; in many places we find it impregnated with *sulphur*, with putrid exhalations, and the like; nay, frequently we even meet with earthy particles floating in this element.—When all foreign ingredients are separated from it, the subtle aërial body still remains of

\* “Our bodies are equally pressed upon by the incumbent atmosphere, and the weight they sustain is equal to a cylinder of the *air*, whose base is equal to the superficies of our bodies.—Every foot square of this superficies sustains a quantity of *air* equal to 2660lb.; so that if the superficies of a man’s body was to contain 15 square feet, which is pretty near the truth, he would sustain a weight equal to 39,900lb. The difference of the weight of the air, which our bodies sustain at one time more than at another, is also very great; that between the greatest and the least pressure of air upon our bodies has been proved to be equal to 3902lb. Hence it is so far from being a wonder, that we sometimes suffer in our health by a change of weather, that it is the greatest miracle we do not always do so. For when we consider, that our bodies are sometimes pressed upon by near a ton and a half weight more than at another, and that this variation is often very sudden, it is surprising that every such change should not entirely break the frame of our bodies to pieces. And the vessels of our bodies, being so much strained by an increased pressure, would stagnate the blood up to the very heart, and the circulation would quite cease, if Nature had not wisely contrived, that when the resistance to the circulating blood is greatest, the *impetus*, by which the heart contracts, should be so too. For upon increase of the weight of the air, the lungs will be more forcibly expanded, and thereby the blood more intimately broken and divided; so that it becomes fitter for the more fluid secretions, such as that of the (supposed) nervous fluid, by which the heart will be more strongly contracted, and the blood’s motion towards the surface of the body being obstructed, it will pass in greater quantity to the brain, where the pressure of the air is taken off by the *cranium*, upon which account also more spirits will be separated, and thus the heart too more enabled to carry on the circulation through all passable canals, while some others towards the surface are obstructed.”

Quincy’s *New Medic. Dict.*—Article, *Air*.

a compound nature, and is by no means a simple elementary substance, as was formerly believed.

According to the late discoveries in chemistry, the aerial basis of the atmosphere consists of *three* different species of air, namely, of pure, respirable, or dephlogisticated air; of azotic, or phlogisticated air; and of fixed, aerial, or carbonic acid air.—The proportion of the first, namely, pure or vital air, consists, according to the French Chemists, who have given it the name of *Oxygen*, of 27 or 28 in the hundred parts; the second, *viz.* the *Azote* of the French, of 72 or 73 in the hundred; and the third, namely, the *Carbonic acid air*, of about one part only in the hundred.\*

\* The accurate experiments made by the late SCHEELLE and BERGMAN, in Sweden, do not much differ from those of the French Chemists, with respect to these proportions. For, according to Scheele and Bergman, the common proportion of vital air, or oxygen, in the atmosphere, is about one fourth; that of azote about five eighths; and that of carbonic acid nearly one sixteenth; the last of which, by the French, is computed only at one hundredth part, that is, five parts in the hundred less than the Swedish philosophers maintain.

The following is a concise history of *Oxygen*:—In August, 1774, Dr. PRIESTLEY, and much about the same time Mr. SCHEELLE, in Sweden, discovered this respirable part of atmospheric air, or rather they exhibited it, for the first time, in a pure state. This elastic substance was first called *dephlogisticated air*, agreeably to the hypothesis of *phlogiston*;—afterwards it went under different names, as pure air, fire-air, vital air, until the late hypothesis of *Oxygen*, or the acidifying principle, has procured it the name of *oxygen gas*.—But still more diversified than these names, are the theories which have been proposed on the nature and properties of this species of air, during the last twenty years. With *Priestley*, it is the purest air freed of all phlogiston; with *Scheele*, it is the nitrous acid deprived of its water; according to *Bergman*, it is one of the unknown constituents of nitrous acid; with *Fontana*, it is the dephlogisticated nitrous acid; *Forsler* considers it as air united with fire; Mr. *Watt*, of Birmingham, thinks to find in it elementary fire combined with hydrogen or inflammable gas; *Aebard* and *Gren* formerly believed it to be water combined with much Caloric, or the principle of heat; but *Gren*

*Oxygen* is much better adapted to the respiration of animals, than common atmospheric air. If two animals be inclosed in vessels, one of which contains pure oxygen, and the other common atmospheric air, in proportions equal to the size of the animals, the former in the oxygen will be found to live from six to seven times longer, than the latter in common air. It is properly this oxygen which we inspire, and which is the grand support of animal life. Persons apparently dead, or in a state of suffocation, have been instantly restored to life by its influence, and from the corresponding testimony of several respectable physicians, it appears to have been employed with advantage in many obstinate diseases.—The celebrated *INGENHOUS* therefore gave it the name of *vital air*. It promotes combustion in a very high degree. A candle will burn in it from six to seven times longer than in common air, with a much greater degree of heat, and a more brilliant flame. Bodies in a glowing state, are immediately inflamed, when put into oxygen gas; and even metals, which are not very fusible, are melted in it, and converted into oxyds, or calces, with the greatest facility.

latterly maintained, in his System of Chemistry, that it is the unknown basis of vital air combined with Caloric;—if we believe *Weftrumb*, it is elementary air in a state of combination with Caloric, but the basis of the former cannot be discovered; according to *Fourcroy*, it is an unknown elementary matter united with inflammable air; in the opinion of *Lavoisier*, it contains the acidifying principle, *OXYGEN*, and the principle of Heat, *CALORIC*; Mr. *Cavendish* maintains that it is dephlogisticated water; and according to *De la Metberie*, it is an unknown substance combined with water and fire; &c. &c.

*Azote*, by others called phlogisticated, mephitic, corrupted, or suffocative air, is absolutely irrespirable, and not miscible with water. It arises from the change which atmospheric air undergoes in every process of combustion, putrefaction, and respiration, whether produced by nature or art.

Azote enters into no combination with water, but may be rendered less hurtful by shaking it with that fluid: this accounts in some measure for the salubrity of the sea-air. It greatly promotes the growth of plants, and readily accumulates in apartments filled with people, or containing articles fresh-painted with oil-colours, or in which strongly fragrant flowers are kept, without having any access of fresh air. We should be extremely cautious in entering such places; as diseases of the breast and lungs are too frequently the consequences of neglect, obstinacy, or ignorance.

The *Carbonic acid* of the French is the *fixed air* of Dr. BLACK, and the *Aërial acid* of BERGMAN. This species of air is miscible with water; but in its pure state equally irrespirable as the Azote. It derives its origin, partly from the vinous fermentation of vegetables, and some animal substances, and partly from the mild alkaline salts and earths combined with acids. Much of this air is found in mines, where it frequently distresses the workmen by its suffocating qualities. It is also observed in most mineral waters, where a stratum of it sometimes swims upon the surface of the well. These waters, as well as fermented liquors

which contain a considerable portion of fixed air, receive from it the well known pungency so agreeable to the palate. Hence flat and spoiled beer, or wine, may be corrected and restored to its former briskness, by the addition of fixed air evolved from chalk and vitriolic acid, or by mixing it with new beer or wine in a state of fermentation.

This species of air quickly extinguishes fire, and strongly attracts the fumes arising from candles. As it is unfit for respiration, animals cannot live in it. The warm-blooded animals die in it much sooner than any other; those of an amphibious kind somewhat later; insects are not irrecoverably killed by it; irritability is suddenly destroyed, and the heart of an animal so deprived of life, though still warm, no longer exhibits any signs of motion.

There is another species of mephitic air, which is not miscible with water, which burns with a flame, and if mixed either with atmospheric air, or oxygen gas, instantly catches fire, and is exploded: this has received the name of inflammable air,\* and deserves to be

\* This air may be obtained in a great variety of ways, from all substances liable to inflammation, or containing combustible matter, by means of heat, fermentation, acids, and the like; nay, even from metals, by directing the steam of boiling water through a red-hot metallic tube.—It is the spontaneous production of nature, throughout her *three* kingdoms. In mines, in subterraneous caverns, and particularly in coal-pits, it is known by the name of *choak-damp*. It is copiously generated in the intestines of living animals, and is frequently met with in common sewers, burying grounds, and places where dead animal bodies are exposed to putrefaction.

The white Dittany, (*Dictamnus albus*, LIN.) when in flower, generates so great a quantity of inflammable air, that the atmosphere around it has been observed to catch fire. In swamps, pools, and

mentioned here, although it cannot be considered as a constituent part of the atmosphere.

With respect to the *specific gravity* of the different airs before enumerated, it is in this place only necessary to observe, that the heaviest is the fixed air, or carbonic acid gas; next to this comes the azote and oxygen, both of which are heavier than the common air of the atmosphere; and lastly, hydrogen, or inflammable gas, which is the lightest of all; for it is even lighter than the purest atmospheric air.

When the atmosphere is too much impregnated with any of the mephitic gases, its influence on the human body is extremely noxious. Thus we see many of the workmen in lead-mines dying in the prime of life, of an obstinate and incurable colic, which is attended with the most painful obstructions.—Painters, glaziers, potters, and manufacturers of glazed earthen ware, are from a similar cause exposed to the same dreadful disease; being obliged to make use of great quantities of lead\* in different forms.

other stagnant waters, where a number of plants, particularly sage, calamus, and the like, are putrifying, we find a species of inflammable gas, which is known by the name of *marsh-air*, or more commonly, the *ignis fatuus*, or *Will-o'-the-Wisp*.

\* Whether this insidious and deleterious metal be communicated by inhaling its vapours through the lungs, or by absorbing them through the pores of the skin, the effects of it are equally dangerous and fatal. The internal use of sulphur, and both the internal and external use of vegetable oils, or animal fats, are the only antidotes hitherto discovered against this virulent bane of the manufacturer and the artist.

Most trades and occupations are subject to peculiar diseases; in some the materials of the manufacture have a pernicious influence on the body, and in others the nature of the employment is hurtful, either from requiring a sedentary life, a reclined, stooping, or stand-

It is almost unnecessary to mention the frequent and sudden deaths that have taken place from the explosion of inflammable air in mines, or from the opening of pits, deep wells, and other confined places. Neither is any thing so much calculated to corrupt and poison the air, to fill it with noxious vapours, and to generate diseases, as the *burying-grounds* established within the walls of populous cities, where human bodies are deposited, as if with an apparent design to produce an atmosphere, which is particularly fatal to the tender lungs of children, and in no small degree hurtful to adults.

As the mass of atmospheric air is incessantly corrupted by the respiration of men and animals, by the burning of so many natural and artificial fires, by the dissolution and putrefaction of innumerable substances, and by various other phlogistic or desoxygenating processes, it would at length become altogether incompetent for its original designation, if Nature had not provided effectual means for its improvement and restoration. Among the most powerful of these, we may place the growth and vegetation of plants.—For this very important discovery we are indebted to Dr. PRIESTLEY, who was so fortunate as to hit upon it, after he had long employed him-

ing posture, or from being performed in a confined air, or at a great fire, and the like. Hence *millers, hair-dressers, and stone-masons*, frequently die of a consumption of the lungs, in consequence of the minute particles of dust which they are continually obliged to inhale.—Manufacturers of wool, and particularly hatters, are much troubled with obstinate cutaneous diseases; and all those whose business is attended with grease and dust, suffer more or less from the consequences of uncleanness.

self in fruitless attempts, to improve and restore corrupted air, by artificial means. He found that air, rendered mortal by the breathing of animals which had expired in it, was again so completely restored by the vegetation of plants, that, after the lapse of some days, an animal could live in it with equal ease, and for the same length of time, as in a similar quantity of common atmospheric air.

These experiments, indeed, did not succeed with some Naturalists; and Priestly himself, upon repeating them with different plants, found the results rather varying and doubtful: but Dr. INGENHOUSZ removed the greater part of these difficulties, by his book, "Experiments upon Vegetables, 8vo. London, 1779." This ingenious philosopher remarked, 1st, That most plants have the property of correcting bad air within a few hours, when they are exposed to the *light of the sun*; but that, on the contrary, *during the night*, or in the *shade*, they corrupt the common air of the atmosphere;—2d, That plants, from their own substance, afford a very pure dephlogisticated air, or Oxygen, when exposed to the rays of the sun; but a very impure air or Azote at night, or in the shade;—3d, That not all the parts of plants, but only the green stalks of leaves, particularly through the sides opposite to the soil, produce this beneficial effect;—4th, That the disengagement of pure or vital air does not commence until the sun has been some time above the horizon; that it ceases altogether with the termination of day-light; and that the disadvantage arising

from the impure exhalation of plants, during the night, is far exceeded by the great advantage they afford during the day; infomuch, that the impure air, generated by a plant during the whole night, scarcely amounts to a hundredth part of the pure vital air or Oxygen, exhaled from the same plant in two hours of a serene day.—Thus we discover a most striking phenomenon in the œconomy of nature; since the vegetation of plants continually counteracts the noxious effects of respiration, combustion, and putrefaction.\* In this manner, the atmosphere is constantly preserved in that necessary state of purity and temperature, which is the most salutary both to animals and vegetables.

We have learnt the effects produced on the human body by the atmosphere and the changes of the weather, partly from observations made by ourselves and others, and partly from their influence on inanimate matter, by which we can judge in some measure of its analogous effects on the human frame; but we should not thence conclude that our knowledge, in this respect, is either complete or infallible. Observations may frequently deceive us, since the

\* It should be recollected here, that when the growth of plants is interrupted by the cold of winter, so that they no longer generate a beneficial air to purify the atmosphere, Nature has ordained it, that this very cold of the winter itself contains the most effectual virtues to stop the progress of putrefaction. We further find, that in the most unwholesome, and particularly in marshy countries, those very plants appear to be very profusely distributed, which most eminently possess the property of purifying the air. And as the pure air, or oxygen, is of greater specific gravity than the common air of the atmosphere, it is perfectly consistent with the operations of nature, that the oxygen should settle towards the lower side of the leaves of plants.

human body, besides the weather, is incessantly exposed to the effects of other external agents, which may easily elude our attention. Further, the atmosphere surrounding us, besides the properties cognizable by our senses, or discoverable by the assistance of particular instruments, may also be impregnated with substances which have hitherto escaped our researches, and which nevertheless may have the power to effect important changes. Lastly, we ought not to consider the arguments deduced from analogy as strictly conclusive; we should remember, that the effects of external objects on the living animal fibre are, in many instances, totally different from those which they produce on lifeless or inanimate bodies.

Recommending these general remarks to the consideration of the reader, I proceed to consider those particular and positive effects, which the different states of the atmosphere produce on our frame, and in what manner they influence our health.

*Warm air* relaxes the solid parts of the body, and occasions a stronger circulation of the fluids. *Heat* is chiefly oppressive to the Nerves; hence the tender and infirm suffer severely in hot weather; hence arise hysteric and hypochondriac complaints, convulsions, and diarrhoeas. *Cold* renders bodies more compact, particularly the solid parts of the animal structure, such as the muscles, nerves, bones, &c. They become more elastic in winter; the appetite for food is stronger, and digestion easier and quicker. On the contrary, the resistance

of the fluid parts becomes so great, that even the increased powers of the solids cannot overcome it, if the cold be too violent. In winter the blood is much disposed to inflammations; hence stiches in the side, inflammatory sore throats, rheumatisms, &c. In persons who take little exercise, the fluids are apt to stagnate, and the solids to chill during the winter;—upon the whole, however, the effects of cold weather may be rendered less hurtful, and even salutary to the body, if proper exercise be not neglected.

*Damp* or *moist air* suddenly relaxes and debilitates; it occasions a slowness in the circulation of the fluids, which gives rise to obstructions, and impedes both the circulation of the blood and the secretion of humours, by checking insensible perspiration. If the moisture of the air increases, we experience an unaccountable torpor and *ennui*; with the loss of energy we lose our gaiety, and the mind is depressed with the body. Damp places and districts are always unwholesome, but more particularly so in cold weather. Moisture, by diminishing perspiration, produces disorders of the throat, the breast, and the abdomen. But the most dangerous and fatal effects on the human body have been observed to arise from moist air accompanied with hot weather; for, when moisture has impaired our energy, heat increases the evil in a great degree, by opening the pores through which the moisture penetrates into the body, and predisposing every part of it to putrefaction and dissolution. This accounts for the

great mortality prevalent during the hot season at Batavia, and some of the West India islands.

*Dry and cool air*, from possessing a due degree of elasticity, promotes in an extraordinary degree the serenity and alertness of mind and body; hence it is found uncommonly salutary to hypochondriacs. But a dry and very cold air generates inflammatory diseases; because it inspissates the blood. Dry and hot air affects us like heat, and enervates the body. But a dry air, which is not too warm, is both agreeable and healthy.

Great and *sudden changes* from a warm to a cold, or from a light to a heavy air, are highly injurious to valetudinarians, and even to the healthy. Soldiers in camp, and, sometimes, travellers, feel very severely the bad effects of cold and moist night air, after long marches and journeys. Weakly and infirm persons have frequently ominous sensations, previous to any remarkable change of the air.

A moderately heavy and elastic air is the most agreeable and salutary to the human body; hence nature has not assigned us our constant residence on the summits of mountains. Yet a light and rarefied air, such as is felt on the highest mountains, is not so unfit for respiration, nor does it manifest so noxious an influence on the human body, as was formerly believed. The latest travellers assure us of the contrary, and speak in decisive terms of the salutary effects of the air, during a short stay in those elevated regions.

Among the different WINDS—which are nothing else but strong commotions of the air—the long continued *North wind* is comparatively the most wholesome; it purifies the atmosphere of noxious vapours, renders the air serene and dry, and thus imparts to the human body elasticity, vigour, activity, and a lively colour. It is, however, troublesome to persons of delicate habits, and occasions in them coughs, inflammation of the throat, pains in the side, obstructions, and febrile diseases. The *South wind* weakens and relaxes the body, and is very apt to produce catarrhal affections. The *Morning wind* is very drying; but *Evening winds* are cool and moist, being frequently accompanied with rain and changeable weather. All these winds differ materially in their qualities, from local circumstances, and accordingly as they blow over a Continent, over the Ocean, or over high mountains and icy regions, from which they carry along with them more or less of cold and humid particles. But upon the whole, too dry weather is always more healthy, than that which is too moist.

Of the four SEASONS of the year, the *Autumn* is the most unhealthy; because then the particles of perspiration not only remain on the body, but are in a state inclining to putrefaction. This disadvantage, however, may be easily obviated by guarding ourselves with proper dress and choosing a suitable diet. Too light a dress, and too thin stockings, are not advisable at this season. The *Spring season* is, in general, the most healthy. Spring,

and the beginning of *Summer*, are most salutary to children and young persons; while the *Summer*, and the beginning of *Autumn*, agree best with the aged. The latter end of *Autumn*, and the beginning of *Winter*, are commonly the most healthy seasons to persons of a middle age.

It has been remarked by medical men, that certain diseases appear and disappear according to the different seasons. Thus, putrid and bilious disorders prevail in *Summer*; inflammatory diseases in *Winter*, and the catarrhal, mucous, and gastric or stomachic affections, in *Spring* and *Autumn*. It has been further observed, that in *Spring* the blood usually circulates more freely; hence probably arose the ancient practice of blood-letting, and taking laxatives at certain regular periods; both of which I have already pointed out, in the preceding Chapter, as dangerous in their tendency, and always hurtful to the healthy.

As the vegetable kingdom is renewed in *Spring*, and as vegetation, in general, is most lively in that season, there can be little doubt, that the pure vital air is then most copiously evolved, by means of the solar light and heat. Hence it follows, that the vernal air is more wholesome than that of *Autumn*, which is saturated with corrupted and putrifying particles. Still the cold of *Autumn*, and the frequent winds then prevalent, prove extremely efficacious in counteracting the baneful effects of corruption and putrefaction.

If the temperature of the air correspond with the natural constitution of the season, we may expect what is called a healthy year, and that the prevalent diseases will be of a mild nature; but if the weather does not agree with the general laws of the season; if, for instance, the Winter prove warm, or at least moderate, or the Spring cold and severe, with sudden alternations of heat, we may expect to find the year pretty generally marked with serious and obstinate diseases.

The temperature of the air depends not a little on the natural situation of the country, whether it lie high or low; whether its mountains oppose or give a free passage to the winds; whether it contains flowing or stagnant waters or morasses, and whether it is open or covered with woods.—Country air, upon the whole, is always purer than that of towns, narrow streets, and crowded buildings.

All *strongly-scented bodies* are more or less pernicious; as well those of a disagreeable smell, as the greater number of fragrant perfumes. The latter, if too strong, are more particularly dangerous, as a sense of disgust does not naturally incline us to avoid them. Among these may be comprehended all vegetable odours strongly volatile and pungent, and which thereby stimulate and stupify the nerves. Hence people, who carry large nose-gays in the hot days of summer, are apt to feel themselves variously and strongly affected, particularly with drowsiness. From this apparently innocent cause, head-achs, vertigoes, fainting-fits, and apoplexies have frequently

been produced in persons of a plethoric habit. These, as well as people of a delicate constitution, are liable to such affections, from the fragrance of many balsamic plants, but particularly from the strong scent of lilies, roses, pinks, the blossoms of oranges, hyacinths, and the like.—Many flowers emit a more powerful fragrance in the night than in the day-time, and the effluvia of several trees and other vegetable bodies are peculiarly dangerous, and sometimes mortal. Of this nature are the walnut and yew trees, under whose shades persons have actually died, who had fallen asleep; and likewise the deadly *Upas* of Surinam, and the no less poisonous *Manchineel* tree of the West Indies.

Aromatics of every kind taint the air in a similar manner, introducing into the human body particles foreign to its nature, all exciting more or less an inclination to sleep. Saffron and hops have sometimes proved fatal; the former in particular has often produced a sleep terminating in death, in those incautious individuals, who had lain down in the ware-houses or upon the bags, in which it was packed. Ambergris and musk are also, on account of their powerful fragrance, very hurtful to persons of an irritable and nervous temperament.

Dwellings in the vicinity of lakes, fens, and marshes, are exposed to all the noxious effects of a moist atmosphere, namely, to the various species of intermittent fevers or agues;—on the other hand, it has been observed, that persons living on the banks of rivers, though at times subject to these, are not very liable to

other diseases, and that running water has a tendency to purify the air, when it is saturated with inflammable particles.

Too sudden a transition from warm to cold air, or the reverse, is pernicious; but to exchange, however suddenly, an unhealthy atmosphere for a healthier, is at all times safe and highly advisable. Numberless instances have proved, that such as were constantly indisposed in the corrupted air of a town, very quickly recovered their health, on removing to the purer atmosphere of the country. Yet the question, *Which air is the most wholesome to live in?* will admit only of a conditional answer. We must attend not only to the particular constitution of the air, but also to the nature and habits of the individual. Neither should we too hastily pronounce every air unwholesome, that does not appear to agree with us. The air of every climate, whether hot, cold, or temperate, may be called healthy, provided it be pure and clear, and occasionally agitated by wind: but a gross atmosphere, and one loaded with animal or vegetable exhalations, is certainly deleterious. After all, perhaps the longevity of the inhabitants may be considered as the best evidence of a healthy district. Thus we find uncommonly long-lived persons in high countries, or such as are visited by frequent winds, and also in small sea-port towns. In villages and places thinly inhabited, the proportion of aged people is considerably greater than in cities or populous towns. This may be ascribed partly to a less degree of corruption in the air, and partly to

a more simple mode of life prevailing in such places : for wealth and riches, the concomitant effects of which are greater luxury and extravagance in living, usually keep pace with the increase of population ; and if the numerous chimney-fires of our populous cities did not serve as so many well-contrived machines for rarefying the atmosphere, incalculable mischiefs must inevitably ensue.

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*Of the Improvement of Air in Dwelling-Houses.*

A HOUSE built on a rising ground, on a healthy soil, in an open, dry country, and neither exposed to the greatest degree of cold in winter, nor to the highest point of heat in summer, may be said to stand in a healthy situation. Hence those apartments are the most healthful as well as comfortable to the individual, which enjoy a pure and free circulation of air in summer, and the cheering rays of the sun in winter : the heat of summer being considerably tempered by the former, and the severity of winter much abated by the latter. Farther, a proper size and height are requisite to constitute a healthful apartment ; for low rooms are detrimental to health, particularly when inhabited by large families, and seldom aired, or rather, which is frequently the case, when all air is carefully excluded by close doors, shutters, curtains, &c. The most proper place of residence in winter is one with a southern aspect, not only as be-

ing more dry, but also more cheerful, and therefore attended with a favourable influence on the spirits. In summer, the situation of a room may be chosen either to the North or to the East, the latter of which is preferable, because it admits the first enlivening rays of the Sun.

Although it is not in every person's power to choose his habitation agreeably to the laws of health; yet this choice of a pure and healthy air is not sufficiently attended to, and it certainly deserves as much consideration in purchasing an estate or country-house as the quality of the soil or other lucrative advantages.

The local constitution of the air depends not merely on the exhalations of the soil itself, but likewise on the different vapours, conducted to and blended with it by the winds, from adjoining places. Thus in a dry and sandy country, considered of itself as healthy, the air may be rendered extremely unwholesome from the vicinity of marshes or other stagnant waters.

The better to judge of the salubrity of the air in any district, we should examine the properties of the wells and springs; for both *air* and *water* absorb the saline and mineral particles of the soil. We may pretty certainly conclude, that a country producing good water, enjoys likewise a salubrious air; and as the best water is tasteless, so the purest air is free from any smell whatever.

The most certain marks, by which to distinguish whether the air in rooms be damp or not, are the following: the walls or tapet-

try change their colour ; bread in closets acquires a mouldy surface ; sponges in the rooms retain their moisture ; loaf-sugar turns soft ; iron rusts ; brass and copper acquire a green colour, or verdigris ; and wooden furniture moulders and crumbles to pieces.

The sitting-room ought, if possible, to be above the ground floor, or in the second story ; it should be so constructed as to admit a free current of air ; but if this cannot be done, it should be frequently aired by opening the windows in dry weather, or by fumigating the room, either with vinegar dropped upon warm stones, or evaporated in a basin over a lamp, or with sugar, juniper-berries, and the like.

Every room is filled with *three* different *strata* of air : 1. The lower part of the room contains the heaviest species of air, namely, fixed or carbonic acid gas, particularly in apartments situated on the ground-floor, or even under ground ; 2. The middle part of the room is filled with the lighter atmospheric air ; and 3. The uppermost stratum contains the lightest or inflammable air, the most corrupted of the three, in consequence of the processes it has undergone by respiration and combustion. In lofty apartments this contaminated species of air is not inspired by the lungs ; because the middle stratum, or the most wholesome of the three, extends to a height above that of a man.

A continual change of the air, by opening the doors and occasionally the windows, however advisable, is yet not sufficient to preserve

a healthy atmosphere in an apartment. For this important purpose the following improvements may be suggested as useful: 1st, Small apertures in the ceiling of the room, or through the walls close to the ceiling, in an oblique direction, so that the rain and snow cannot penetrate into it; 2d, Ventilators, that is, small moveable wheels made of brass or sheet-iron, which are applied to some part of the window-panes, and set in motion by the pressure of the external air. This is an excellent contrivance to introduce fresh atmospheric air into a room, by occasionally opening and shutting the door. The most proper height for placing these ventilators is about seven feet from the floor; 3d, Air-tubes running in a straight direction from the door to the fire-place, or rather to the wall of the chimney, and concealed under the floor of the room. As such tubes, however, are very expensive, and appear better calculated to convey the smoke up the chimney, after all means have been tried in vain, than to conduct the corrupted air from the upper part of a room, I shall mention a better and much easier method of effecting this purpose. It is a late discovery of a physician in France, who contrived it with a view to save the great expense of ventilating or airing large wards in hospitals, filled with patients who laboured under putrid distempers, particularly in the heat of summer. He caused a number of small holes to be made in the uppermost part of the window-frames; into these holes he placed from without an equal number of funnels, present-

ing an aperture of nine or twelve inches diameter, and terminating in the inside almost in a point, or at least in an opening not exceeding the size of a small quill. By means of these simple machines, the air in the sick rooms was so effectually renewed, by the great and constant pressure of atmospheric air from without, that any other artificial process for correcting the putrid air in a large hospital was judged to be unnecessary.

Above all things, the windows and doors of sitting and bed-rooms, when it can be done conveniently, ought to be left open for a certain space of time, every day. This, however, requires to be done at the proper time, neither too early in the morning, nor when it grows dark in the evening, during the vernal and autumnal months; nor at the time when the horizon is overspread with a thick fog. The windows should be opened, when the air is pure and serene; or, in general, when there is less danger to be apprehended from the external air than from that within. Sometimes it may be proper to make use of what is called *pumping* the room, or moving the door backward and forward for some minutes together; but in spring and autumn, our sitting-rooms, and even in winter, bed-rooms, ought to be perspired every clear day, by currents of fresh air, for a considerable time.

In the hot days of summer, the windows may be opened early in the morning and in the evening, in order to cool and refresh the heated air of the room by that from without.

It is however not safe (and has sometimes proved fatal) to leave the windows of a bedroom open at night during the summer-months, as there is no small hazard of checking perspiration by the cool night-air; the susceptibility of the pores being then very much increased by the heat of the day, and the warmth of the bed. Rooms which we inhabit in the day-time may be safely left open during the night. In summer-houses, or such as are surrounded with plants and trees, it will be proper not to open the windows of bed or other rooms, till some time after sun-rise, and to shut them at sun-set: they require also to be opened and shut sooner in hazy than in serene weather.

The airing of apartments should not be neglected even in winter, as coal-fires alone are not sufficient to carry off the corrupted particles of air, unless they be assisted by ventilators.—Here I must oppose and contradict a prevailing, yet mistaken notion, that fire in a room where the windows are open, introduces moist air. On the contrary, the most proper time for opening the windows is after lighting up a brisk fire; as the warmer air of the room will then be powerfully attracted by the colder atmospheric air, and the corrupted particles of the air within most speedily dissipated.

In *moist* and *cold* air, the dress should be somewhat warmer than usual: Flannel may then be worn with double advantage next the skin, and the rooms we inhabit should be warmed, or at least fumigated, with the ber-

ries of Juniper or similar shrubs. Fumigation is likewise attended with this advantage, that it contributes to dry and in some degree to warm the air.

In *moist* and *warm* air the explosion of a little gunpowder will be of use, or vinegar may be evaporated with greater safety, and the floor and walls sprinkled over with this excellent antiseptic.

*Hot* and *dry* air may be tempered by placing vessels filled with cold water in different parts of a room; or, as is often practised in hot climates, by sprinkling water over the floor. The greater or less degree of corruption of the air, in an apartment, depends very much on the kind of labour or exercise performed in it: Six watchmakers will not corrupt the air nearly so much as two carpenters would do in the same space and time; hence appears the necessity of appropriating lofty rooms instead of low garrets, for the workshops of mechanics.

Green plants and flowers placed before the windows are both an agreeable and useful ornament, if not of too strong a fragrance. In serene weather, it may be expedient to strew fresh plants (not flowers) in a dwelling-room, exposed to the rays of the sun, taking care, however, to remove them as soon as the sun withdraws. This method of exposing plants, or even the branches of trees with green leaves, in apartments, may have a beneficial influence on valetudinarians, and particularly on asthmatic persons, as vital air, or *oxygen* is

thereby generated, and introduced very gradually into the lungs.

Large trees with thick foliage should not be placed very near the windows of a house; for, besides that they obstruct the access of day-light and fresh air, and have thus a tendency to make the rooms damp, their exhalations in the evening, and during the night, are by no means wholesome. Trees planted at the distance of eight or ten yards from the house, do not prevent the free access of air; they present an agreeable object to the eye, and cannot be too much recommended, both on account of their cooling shade in summer, and the salutary exhalations they emit during the day.

It has been already mentioned, that the burning of candles corrupts the air; for which reason the custom of illuminating assembly or other large rooms, with a *superfluous* number of candles, must be very detrimental. This extravagance becomes still more dangerous in places where, beside the crowd of people, great quantities of provisions, dressed with the richest spices of the East and West, contribute to saturate the air with the most heterogeneous particles. And as persons of tender lungs must suffer extremely in such an atmosphere, it would be proper to provide all public rooms with a competent number of conic ventilators, of the description before mentioned.

Strictly speaking, we ought not to sit in the room where we dine, or take victuals, until it be aired again: those who can afford this luxury, should be careful not to stay for hours

together over their bottle in the dining-room: the bad effects of such contaminated air are not perceived by the persons continuing their libations after dinner, but are very sensibly felt by any one coming in from the fresh air.

It is no less unhealthy to sleep in a room where a quantity of *green fruit* is kept, a circumstance not attended to in country places, particularly by those who deal in fruit. From its fragrance a portion of inflammable matter exhales, which soon impregnates the air. Hence females of delicate habits have been known to faint, in approaching places where a few quinces were kept. For the same reason, store-rooms and pantries are extremely unwholesome, if provisions of all kinds, animal as well as vegetable, be kept in them; especially oil, candles, fat, flesh meat, whether raw, boiled, or roasted, pastry, and the like.

As foul linen readily imbibes the perspirable matter of the skin, it should never be suffered to remain any time in a bed-room, or sitting-room.

If possible, we should not sit through the day in a room in which we have slept; as the bed-clothes, and particularly feather beds, very slowly part with the exhalations they have imbibed during the night, neither is it sufficient for purifying the air of the room, that it has been ever so well aired in the morning.

The vapour of *charcoal* produces, particularly in close apartments, dangerous and frequently fatal effects. It fills the atmosphere with sulphuric particles which may be inspired, but cannot be expired:—they retard the

motion of the blood-vessels, stagnate the blood itself, penetrate into the head, and produce an acute pain, vertigo, and torpor. Hence the greatest precaution is necessary, where charcoal is used, as innumerable fatal accidents have happened from this source. Dyers, who employ it for drying their cloth upon frames, seldom fail to experience great injury to their health.

All employments, in which persons work among impure wool, oil, colours, and the like, are to a certain degree detrimental to health. Washing, ironing, dressing the hair with greasy curling-irons, burning lamp oil, frequent painting of the walls, all saturate the air of a room with pernicious damp and sulphuric vapours. From the change, which oil and candles in a state of combustion produce in the colour of a white wall and white curtains, we may infer, that this fetid steam must also penetrate into the human body, and if so, must materially affect it.

It farther deserves to be remarked, that all damp vapours are prejudicial, although they should not in themselves have a tendency to corrupt the air. Hence the keeping of wet linen, or even wet clothes, umbrellas, and the like, in dwelling-rooms, should by all means be avoided. Mechanics and others, who are obliged to dry wet things in their strongly heated apartments—joiners, turners, potters, bookbinders, &c. are particularly liable to swellings, and other disagreeable affections in the relaxed vessels of absorption.

*Of Heat and Cold.*

As observation and experience inform us, that immoderate heat relaxes the body, overheats the blood, and exsiccates or consumes the other fluids; and that the people who live in temperate regions are more hardy and vigorous, and attain to a greater age, than the inhabitants of warmer climates; it follows from these premises, that we ought not to enervate the human body by keeping it immoderately warm, by dressing it with a superfluity of clothes, by plunging it unnecessarily into hot baths, by using too strong fires in temperate weather, or least of all, by sleeping in warm rooms, and perhaps on the most heating of all substances, feather beds. The temperature of a sitting-room should not exceed  $60^{\circ}$  of Fahrenheit's thermometer; that of a bed-room may be about  $50^{\circ}$ , as the medium temperature of our climate is between  $50$  and  $55^{\circ}$ .

Although man is, no doubt, capable of inuring himself to a very great degree of heat as well as of cold, yet sudden changes can be supported only by the few who possess very hardened constitutions. The gradual changes of the seasons prepare us in the safest manner to sustain all the alternations of cold and hot weather. It is therefore an error, and of no small consequence, in the modern system of education, that we generally endeavour to habituate our children to the support of cold weather only. Persons who cannot bear the heat of the sun, or strongly heated rooms, are,

from their excessive delicacy, frequently exposed to the most violent, nay to mortal accidents. Hence children ought to be slowly and gradually accustomed to these inconveniencies, which indeed occur frequently, and are more dangerous than those arising from sudden transitions to a colder temperature: for the effects of the latter may, in a great measure, be obviated by exercise and muscular action.

In the sultry days of summer, we should be particularly on our guard against violently overheating the body;—in autumn, we should not dress too lightly, and in the mornings and evenings always somewhat warmer;—in short, we ought to avoid every thing that appears likely to check and repel perspiration. The baneful custom of accommodating our dress to the almanack and the fashion, rather than to the vicissitudes of the weather, in this inconstant climate, must necessarily be productive of many disagreeable consequences. Above all things, we ought to change our summer-dress pretty early in autumn, and to clothe ourselves gradually warmer, according to the variations of the weather. Yet after all, perhaps it would be most advisable to accustom ourselves to one kind of dress only for all seasons. The propriety of this custom I shall more particularly consider in the fourth Chapter.

With respect to the proper time for heating rooms in autumn, it has been supposed, that early fires are unwholesome and productive of frequent catarrhs. This assertion is

certainly ill founded ; for in warming a room, as well as in clothing the body, we should not so much be regulated by the particular time of the year, as the state of the weather, and the degrees of actual heat and cold : in attending to this circumstance, we cannot easily mistake. If, in the temperate days of autumn, the room should feel colder than the external air, it is time to make a moderate fire : in damp and cold weather this is an useful precaution, even in summer. Those who from caprice, parsimony, or prejudice, would rather shiver on some weeks longer, than consult their sensations, often feel the consequence of a violent cold. The Dutch and German stoves certainly afford more uniform heat in a room, though they might not be considered cheerful enough for an English company.

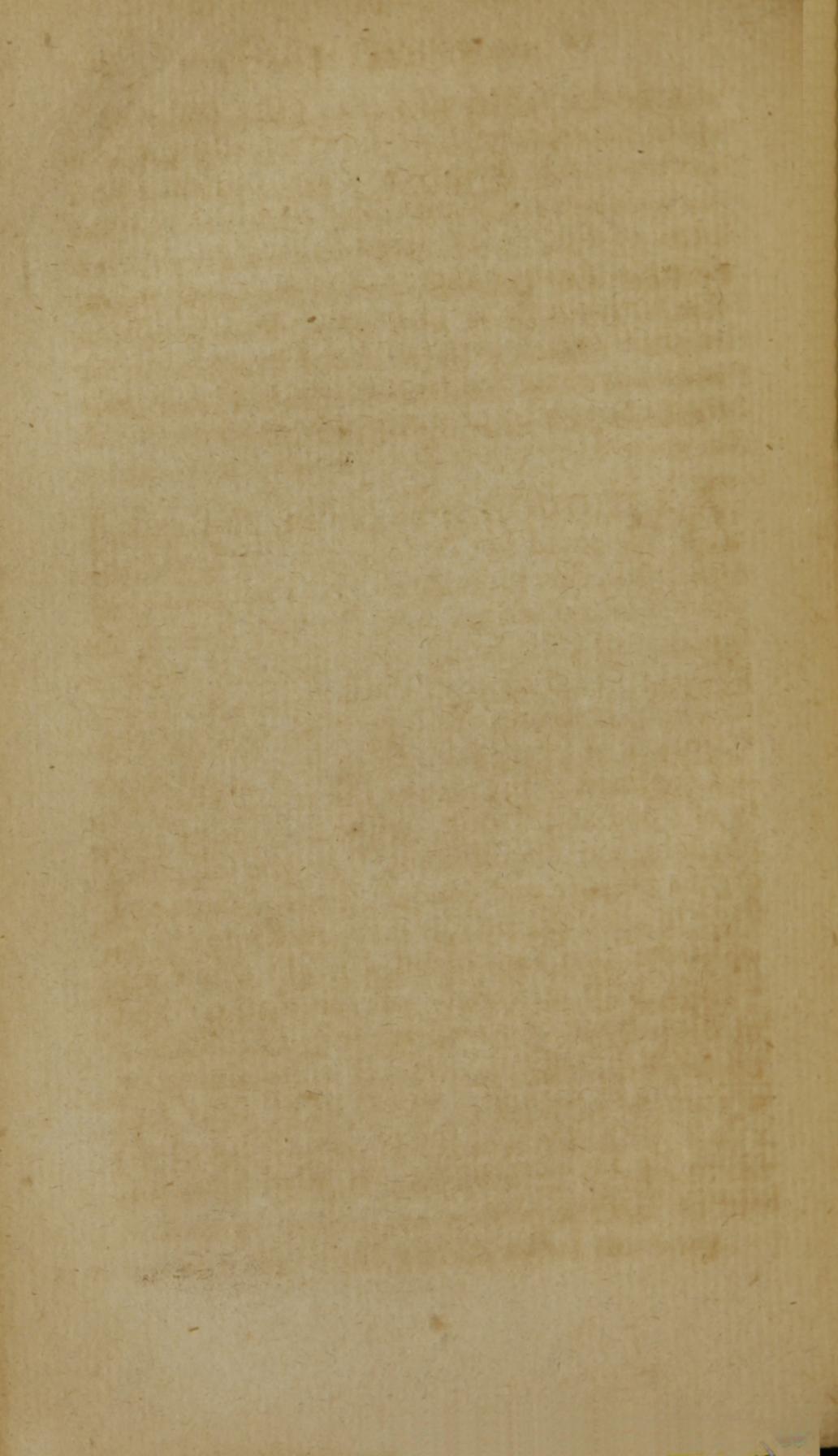
As we can neither breathe nor live without fresh air, we ought not to withdraw our bodies too much from the bracing effects of cold. In this respect, we should act conformably to nature, that is, in the same degree as the warmer weather changes to a colder state, we should gradually expose ourselves to the various changes of temperature. The cold will then neither feel unpleasant, nor impede the necessary perspiration ; especially if we oppose it with vigour and bodily exercise. We ought also to take more solid sustenance in winter than in summer ; because, by the longer continued motion or digestive process of the stomach, the circulation of the blood is accelerated, from which the natural heat of the body is produced. Nature herself dictates—

a compliance with this precept, as she has provided us with more substantial articles of food during the former season than the latter.

Lastly, as every sudden change of the weather from heat to cold, and the reverse, is prejudicial to the body, we ought to guard against every circumstance by which *perspiration* may be suddenly checked. Hence we never should remove from a strongly heated apartment into a fresh and cold air, unless we are provided with a warmer dress;—in hot days, or after violent exercise, we should not frequent vaults, cellars, or ice-houses, undress immediately after overheating the body, nor take rest upon a damp soil or upon stones, nor bathe in cold water. Such transgressions have often been punished with instant death, or, what is still worse, have brought on a painful and lingering species of consumption, which has hitherto baffled the united efforts of the Faculty, and which annually makes dreadful havoc among people of a middle age.\* It is devoutly to be wished, that the experiments, now

\* According to the statement given by the Bills of Mortality, the total number of deaths in London, during the three spring months of 1799, amounted to 5271. Among these, no less than 1353, or upwards of one fourth, were carried off by *consumption*!—Although *consumption* and *decline* are terms often used to express many other chronic diseases, as well as *pulmonary consumption*, so that the above stated number probably includes various species of decline, yet, even with these allowances, the number of victims to *general consumption* is truly terrific. Let the reader reflect, for a moment, on the following melancholy inference:—If the population of the country consist of between nine and ten millions, of whom the 30th or the 33d part, that is, about 300,000, die annually, it follows that this merciless disease, CONSUMPTION, cuts off about 80,000 persons every year, in Great Britain alone, and these generally in the prime of life, when Society ought to be benefited by their mental and bodily exertions!!

purfued with factitious airs or gafes, and with the fox-glove, may afford fome remedy againft this formidable deftroyer of the human fpecies, which cuts off incredible numbers in the bloom of life, and fpare neither age, rank, nor fex. And, as there is fo much reafon to believe, that a great proportion of confumptive cafes originate from the fudden tranfitions above mentioned, no language can be ftrong enough to deprecate practices, as injudicious as they are deftructive.



## C H A P. III.

*Of FOOD and DRINK;—their Quantity, Quality, Proportion to each other, Time of taking them, &c.—Of SPICES.—A Classification of the most usual alimentary Substances, according to their individual Effect on Health.*

**A**LTHOUGH it be certain, that animal life could not be supported without food and drink, few individuals give themselves the trouble of reflecting, how the very important function of assimilating our aliment is accomplished. That office of the stomach, by which all living creatures are supported, deserves the attention of every inquisitive mind. Were I not confined in my plan to the relative salubrity of Food and Drink, without entering into physiological disquisitions, how the digestive organs prepare and conduct the food from one stage to another, till it is converted into chyle, and from that into blood, I might amuse my readers with a variety of speculations and theories, none of which are fully established; but such digressions, however entertaining or gratifying to curiosity, would be of little service, either in making the proper choice of aliment, or in ascertaining its wholesome or pernicious qualities.

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If, in the early periods of society, when men subsisted upon roots, plants, and animal food, as they were promiscuously found, people did not reflect upon the relative salubrity of things, we have no right to censure them; as they often might have been starved, before they could have discovered their qualities. But if we, in our present state of knowledge, neglect such inquiries; if we indiscriminately feed on whatever is presented to our palate; such conduct deserves severe animadversion. For, if man assume the right of calling himself Lord of the Creation, it is a duty incumbent on him, to make himself acquainted with the nature and properties of those substances, which so essentially contribute to animal existence.

Hence it may be justly asked, what are the constituent parts of aliment—how are they to be distinguished—are they of different kinds, or do they, with all the difference of form and taste, still manifest the same properties, powers, and effects—do they promiscuously supply all the parts of the human body, or are particular kinds of food more or less adapted to supply the wants of different parts of the body—and lastly, have all substances, we make use of as food, an equal share in this *nutritive principle*?

Such are the questions, which must arise in every reflecting mind; and as the preservation of the body depends so much on the manner in which the continual waste is supplied, it is a matter of the first consequence, to choose the substances which are most congenial to the different states and conditions of the body.

An eastern Dervise was once asked by a wealthy Mahometan, "Of what service to society is an order of men, who employ themselves in speculative notions of divinity and medicine?"—"If you were more cautious and temperate in your meals," answered the Dervise; "if you would learn to govern your passions and desires, by a due attention to abstinence, you all might be sages, and have no occasion for Dervises among you. But your appetite and aliment impair your understandings!"

In the consumption of food and drink we are liable to commit errors, both as to their quantity and quality. The error in the quantity, however, is generally the most detrimental. A small portion of food can be better digested and more easily prepared into chyle, or that alimentary fluid, from which the blood derives its origin, than a large portion of food, which injures the coats of the stomach, and prevents them from exerting their force. Hence every satiety, or superfluity, is noxious.

It is in infancy, and early age, that the foundation is laid for the many diseases arising from indigestion, which are now found in almost every family. If children are fed immoderately, and beyond the real wants of nature, the first passages become too much distended, and their stomach by degrees acquires an unnatural craving for food, which must be satisfied, whatever be the consequence. These excessive supplies not only are unnecessary, but produce the most serious and fatal disorders.

There is a certain relation subsisting between what is taken in, and what is lost by the body : if we eat and drink much, we likewise lose much, without gaining any more by it, than we might do by moderate meals. For that which affords the alimentary particles, is as it were drowned by the current ; and muscular energy is not only decreased, but in a great measure destroyed. Yet eating too little would be going to the opposite extreme, weaken the growth to bodily perfection, and eventually diminish the digestive power of the stomach, by depriving it of its due share of exercise and support.

Nature is easily satisfied, and is always best provided, if we do not intrude upon her more than she is accustomed to. If we have, for some time, taken little nourishment, nature becomes so habituated to it, that we feel indisposed, as soon as the usual measure is transgressed ; and both the stomach and its digestive powers are thereby impaired.

The hardy countryman digests the crude and solid food, at which the stomach of the luxurious citizen recoils. In order to strengthen the stomach, we ought not to withhold from it what keeps it in proper exercise. But, for this purpose, we should rather improve the quality, than increase the quantity of alimentary substances. It is with this organ as with all other parts of the body : the more exercise we give it, the more strength and vigour it acquires. Hence, it is highly improper to leave off eating food of difficult digestion, as some

people are apt to do ; for this is not the way of improving the energy of the body.

It would be a fruitless and impracticable attempt, to lay down fixed rules, by which the respective salubrity or perniciousness of every species of aliment might be determined, in its application to the individual. It has been before observed, that such rules do not exist in nature ; and that the particular state and condition of the person, time, and circumstances, must serve as our guide. Hence it may be considered as a general rule, that all incongruous mixtures and compositions, for instance milk and vinegar or other acids, or milk and spirits, are hurtful, by generating an acid and acrid whey in the stomach, and at the same time producing an indigestible coagulated mass.

Having premised these introductory remarks, I proceed to treat

### *Of Food in particular.*

1. *As to its quantity.* A much greater number of diseases originate, upon the whole, from irregularities in eating, than in drinking ; and, in the latter respect, we commit more frequent errors with regard to quantity, than quality : otherwise the heterogeneous mixture of provisions, with which we load our stomachs, would disagree with all. This indeed but too often happens. One who eats slowly, and a little only of a variety of dishes, will less injure his stomach than another, who eats

immoderately of one or two favourite articles, and partakes of the others only for the sake of custom, or as a compliment paid perhaps to a fair hostess.—The gastric juice which is generated in the stomach, is capable of dissolving and digesting the most diversified materials, provided they be not unsuitably mixed; and a perfectly healthy stomach can prepare a chyle, or a milky fluid, of the same nourishing principle, from all eatable substances whatever.

The general rule then is, *to eat as much as is necessary to supply the waste suffered by the body*; if we transgress this measure, we produce too much *blood*; a circumstance as detrimental, though not so dangerous to life, as that of having too little. If we were never to trespass the due limits of temperance, our natural appetite would be able accurately to determine, how much food we might consume, without diminishing our vivacity. But, from the usual physical education of children, this can scarcely be expected in adults. We ought therefore to pay strict attention to the state of those intestines, which serve to prepare the alimentary fluid; and when these are in a relaxed or diseased state, we should instantly begin to be more moderate in eating.

There are three kinds of *appetite*: 1st, The *natural* appetite, which is equally stimulated and satisfied with the most simple dish, as with the most palatable; 2d, The *artificial* appetite, or that excited by stomachic elixirs, liqueurs, pickles, digestive salts, &c.; and which remains

only as long as the operation of these stimulants continues; 3d, The *habitual* appetite, or that by which we accustom ourselves to take victuals at certain hours, and frequently without a desire of eating.—Longing for a particular food is likewise a kind of false appetite.—The *true* and *healthy* appetite alone can ascertain the quantity of food proper for the individual: if in that state we no longer relish a common dish, it is a certain criterion of its not agreeing with our digestive organs. If after dinner we feel ourselves as cheerful as before it, we may be assured, that we have taken a *dietetical* meal. For, if the proper measure be exceeded, torpor and relaxation will be the necessary consequence; our faculty of digestion will be impaired, and a variety of complaints gradually induced.

The stomach being distended by frequent and violent exertions, will not rest satisfied with the former quantity of food;—its avidity will increase with indulgence in excess; and temperance alone can reduce it to its natural state, and restore its elasticity. Fulness of blood, and corpulency, are the disagreeable effects of too much eating; which progressively relaxes the stomach, and punishes the offender with headach, fever, pain in the bowels, diarrhoea, and other disorders.

The more suddenly this expansion takes place, the more forcibly and dangerously it affects the stomach; and its fibres, being too much extended, are the more sensible of the subsequent relaxation. Slow eating, therefore, preserves the fibres in a due state of elasticity.

Hence, *to eat slowly*, is the first maxim in Di-  
etetics: the stomach suffering in this case but  
a very gradual distension, as the food has suf-  
ficient time to be duly prepared by mastication.  
He who observes this simple rule, will feel  
himself satisfied, only when he has received a  
due proportion of aliment. But he who swal-  
lows his food too quickly, and before it is per-  
fectly chewed, will imagine he has eaten  
enough, when the unmasticated provisions oc-  
casion a sense of pressure on the sides of the  
stomach.—The teeth are designed by nature  
to grind our food, and to mix it with the sal-  
iva, produced by innumerable glands, and  
destined to promote its solution.

A healthy appetite is also determined by the  
season, to the influence of which the stomach  
is exposed, in common with the other viscera.  
Hence heat, in general, relaxes and exhausts  
the body, from its tendency to dissipate the flu-  
ids, or to diminish their quantity; and conse-  
quently the stomach cannot digest the same  
portion of food in summer, which it does in  
winter. There are however persons, who have  
the strongest appetite, and possess the most  
vigorous digestive powers, in the extreme heat  
of summer. The bile of such individuals is  
of a watery consistence, and too sparingly se-  
creted; a defect, which is best remedied by  
heat. Those who take more exercise in winter  
than in summer, can also digest more food.  
But as individuals leading a sedentary life usu-  
ally suffer in winter from a bad state of diges-  
tion, owing to a want of exercise, they ought  
to take less food in that season.

We call those substances *nutritive*, which restore and supply what has been wasted. They conduct to the body homogeneous or assimilated parts, by means of the intestinal canal, and by changing these parts into muscular substance or flesh, or into the fluid form of blood. Since some alimentary articles communicate their nutritive element sooner than others, as they contain coarser or more delicate particles, which according to their nature are more or less apt to be assimilated with the body, it follows, that all of them cannot be equally nourishing.

Too little aliment debilitates the body, which thereby acquires less than it loses by respiration; it hastens the consumption of life; the blood becomes inert and rarefied; or is rendered acrid and liable to putrefaction. After long fasting the breath is fetid, and the animal body becomes disposed to putrid fevers:—We can more easily digest a heavy meal, in four hours of accelerated respiration and muscular action during the day, than in eight hours of sleep. This circumstance has led mankind to make their principal meal about the middle of the day. A person who sits up five or six hours after supper, will feel himself much more inclined to take a second supper, than to go to bed.

*Abstinence* readily induces putrid diseases: a fasting of twenty-four hours is followed with a disgust and aversion to food, which of itself is a symptom of putrescency, and is at length succeeded by delirium.—After taking for some time too little food, the body is enfeebled;

the vessels are not sufficiently supplied; their action on the whole mass of the blood, and of the blood on the several vessels, is interrupted; its free circulation is checked; and the smaller vessels corrugate, so that the thinnest blood is no longer capable of pervading them, as is the case in old age. When a person has suffered so much from extreme hunger, that his fluids are already in a putrescent state, much food must not be given him at once; for his contracted stomach cannot digest it. Such a body must be supported with liquid nourishment, in small quantities, and be treated altogether like a patient in a putrid or nervous fever. Hence, no animal food of any kind, but subacid vegetables alone, can be given with propriety.

2. *As to the quality of aliment, we must here investigate the nature of Digestion.* This function may be aptly divided into two different processes: *Solution* and *Affimilation*. *Solution* takes place in the stomach, where the food is changed into a pulp, where it is dissolved according to its greater or less solubility, and where its nourishing particles are absorbed. *Affimilation* only begins, when the solution has already taken place in the stomach, when the nutritive substance, or the alimentary juice, is inhaled by the absorbent vessels, and conducted to the blood, by means of the lacteals. *Affimilation*, therefore, is that function, by which the aliment is as it were animalized: and hence it has been conjectured, that animal food is easier digested than vegetable, as being more analogous to our nature, and more easily converted into animal fluids.

There are articles of easy and of difficult digestion, in the animal as well as in the vegetable kingdom : in both we find some substances, which are completely indigestible, and which pass through the alimentary canal, without affording any nourishment.

*The most simple dishes are the most nourishing.* The multiplied combinations of substances, though they may please the palate, are not conducive to health. All substances containing much jelly, whether animal or vegetable, are nourishing ; for this alone affords nutriment ; and the hard, watery, and saline particles of food cannot be assimilated or converted into chyle. Nourishing substances would, indeed, be more conformable to Nature ; but, as our appetite generally incites us to eat somewhat more than is necessary, we should acquire too much alimentary matter, and become too full of blood, if we were to choose only such articles of food as contain a great quantity of jelly.

Dr. BUCHAN very justly observes, that “ the great art of preparing food is to blend the nutritive part of the aliment with a sufficient quantity of some light farinaceous substance, in order to fill up the canal, without overcharging it with more nutritious particles than are necessary for the support of the animal. This may be done either by bread or other farinaceous substances, of which there is a great variety.” Those, who are not employed in hard labour or exercise, do not require such nourishing food as those, whose nutritive fluids are in part consumed by muscular exertions and violent perspiration.

Such as have suffered frequent losses of blood, from whatever cause, will best restore it by strong aliment ; which, on the contrary, ought to be avoided by the plethoric. Those, lastly, whose frame is weakened and emaciated by irregularities and dissipation, should not attempt to eat much at a time, but rather repeat their meals more frequently, at proper and regular intervals.

Whether we ought to make use of articles of easy or difficult digestion, cannot be determined by general rules : every person must attend to the effects, which substances of different degrees of digestibility produce on his stomach. The chyle, when prepared of substances not easily digestible, is solid and concentrated, and consequently affords a substantial muscular fibre : but such substances as the stomach cannot digest, ought never to be used as food.

It is an important rule of diet, *to eat if possible of one kind of meat only*, or, at all events, *to eat of that dish first which is the most palatable*. The stomach is enabled to prepare the best chyle from simple substances, and will thence produce the most healthy fluids. And if we follow the second part of this rule, we are in no danger of overloading the stomach. At a table dietetically arranged, we ought to begin with those dishes which are most difficult to be digested, and finish our meal with the most easy ; because the former require stronger digestive powers, and more bile and saliva, all of which become defective towards the end of a heavy meal. The power of di-

gestion in the stomach is undoubtedly most vigorous and active, when that organ is not too much distended; and the more coarse substances also require a longer time for being duly assimilated.

To begin meals, as the French, Germans, and Scots generally do, with *soups* or *broths*, is highly improper and noxious. These liquid dishes are ill calculated to prepare the stomach for the reception of solid food; as they not only weaken and swell it by their bulk and weight, but also deprive it of the appetite for the succeeding part of the dinner. Every tension is attended with relaxation, so that we imagine ourselves satisfied sooner than we are in reality. Besides, broths and soups require little digestion, weaken the stomach, and are attended with all the pernicious effects of other warm and relaxing drinks. They are beneficial to the sick, to the aged, and to those who, from the want of teeth, have lost the power of mastication; but for such persons they ought to be sufficiently diluted, and not too much heated with spices;—otherwise they will be digested with some difficulty.

Many individuals are accustomed to spend the whole forenoon without breakfast, and feel no inconvenience from it, while others of a more delicate stomach could not bear such abstinence, without unavoidable cravings and debility. The business of digestion is usually accomplished within three or four hours after a meal; hence the stomach is empty at rising in the morning, and the body often enfeebled by long fasting. Our breakfast should there

fore consist of more solid and nourishing substances, than are now generally used for that meal ; especially if our dinner is to be delayed till the late hours which modern fashion prescribes. We should breakfast soon after we get up, dine about mid-day, and not protract the hour of supper till the time which Nature points out for rest

A principal rule of diet is to take food with an easy and serene mind ; hence it is preferable to dine or sup in company : our food has thus more relish, it agrees better with us, and we eat more slowly and cheerfully. But we ought not to indulge ourselves in sitting too long at table, which is always pernicious to health. For digestion takes place, even while we sit at table ; and as the stomach, when gradually supplied, craves for additional quantities of food, especially when a variety of palatable dishes stimulates the appetite, we ought to be much on our guard against these seductions. Hence it is most advisable to make our dinner on one or two dishes ; because we can eat more of a plurality of dishes than of one or two only, and do not so easily perceive when the stomach is overloaded.—To read, or otherwise exercise the mind, during the time of eating, is likewise improper.

Gentle exercise, before dinner or supper, is very conducive to increase our appetite, by promoting the circulation of the blood. But too violent exercise impairs the appetite, and weakens the powers of the stomach, by means of its sympathy with the other parts of the body. In proof of this, we seldom see peo-

ple worn out with fatigue able to partake of their usual repasts. The exercise, however gentle, ought to be over at least half an hour before dinner ; because it is hurtful to sit down to table immediately after great fatigue.

As to our conduct *after dinner*, it is scarcely possible to give rules that are generally applicable, and much less so to every individual. From the contradictory opinion of the most esteemed authors, they appear not to have discriminated between the various states and conditions of animal life ; and as exercise was found to agree with some constitutions, and to disagree with others, a diversity of opinions necessarily arose among those who were so passionately fond of reducing every thing to general rules. In order then to remove these difficulties, I think it necessary to observe, that though it be apparently consistent with the instinct of nature to rest some time after dinner, according to the example of animals, yet this time, as well as other concurrent circumstances, deserves to be more precisely determined.

As soon as the food has entered the stomach, the important office of digestion begins : the vigour of the organs exerted on this occasion ought certainly not to be abridged by violent exercise ; but muscular and robust people feel no inconvenience from gentle motion about *one* hour after the heaviest meal. On the contrary, it is highly probable that the abdominal muscles receive additional impetus, by exertions of a moderate kind. But as the whole process of digestion is of much longer duration

than is generally imagined, the afternoon hours cannot be employed advantageously to health, in any labor requiring strong exertions.

The transition of the alimentary fluid into blood, which takes place in the third or fourth hour after a meal, and in some people of a weak and slow digestion much later, is always attended with some increase of irritability, which, in persons of great sensibility, may degenerate into a painful sensation or illness. At this time, therefore, nervous and hypochondriac persons are frequently troubled with their usual paroxysms; they are seized with anguish, oppression, and an inclination to faint, without any external cause. Persons in this condition of body, as well as all febrile patients, and especially those who are troubled with stomachic complaints, would act extremely wrong and imprudent, to undertake any exercise whatever, before their victuals be completely digested; as during digestion all the fluids collect towards the stomach. In violent exercise, or in an increased state of perspiration, the fluids are forced to the external parts, and withdrawn from the stomach, where they are indispensable to assist the proper concoction.

As to the propriety of *sleeping after dinner*, we may learn from those animals, which sleep after feeding, that a little indulgence of this kind cannot be hurtful. Yet this again cannot be established as a general rule among men. For the animals which sleep after food, are for the most part supplied with articles of

so very difficult digestion, and so hard in their nature, that great digestive powers are required to convert them into alimentary matter. Hence this practice can be recommended only to the nervous and debilitated, to weakly persons in general, who are much employed in mental exercise, and are past the middle age—especially after a heavy meal, in hot weather, and warm climates.

Experience, however, teaches us, that, in this respect, a short sleep, of a few minutes only, is sufficient and preferable to one of longer duration; for, in the latter case, we lose more by an increase of insensible perspiration, than is conducive to digestion.—But the position of the body is far from being a matter of indifference. The best is a reclined and not a horizontal posture, from which head-ach may easily arise, when the stomach presses upon the subjacent intestines, and the blood is thereby impelled to the head. The old practice of standing or walking after dinner is so far improper, as it is hurtful to take exercise, while the stomach is distended by food, the sensation of which lasts at least for one hour.

In the primitive ages, people subsisted chiefly upon plants and fruits. Even to this day, many sects and whole nations, the Bra- mins for instance, abstain from the use of animal food. The ancient Germans, also, who were so renowned for their bodily strength, lived upon acorns, wood apples, sour milk, and other productions of their then uncultivated soil. In the present mode of life, here as well as on the Continent, a great propor-

tion of the poorer class of country-people subsist chiefly on vegetables; but although they duly digest their vegetable aliment, and become vigorous, yet it is certain, that animal food would answer these purposes much better. Hence in countries where the labouring class of people live principally upon animal food, they far excel in bodily strength and duration of life.

A popular writer observes, that “animal food is less adapted to the sedentary than the laborious, whose diet ought to consist chiefly of vegetables. Indulging in animal food renders men dull and unfit for the pursuits of science, especially when it is accompanied with the free use of strong liquors.” This is so far true, but Dr. Buchan ought to have added, that the infirm, and those who labour under complaints of indigestion, will suffer still more from the use of vegetable substances, which by their peculiar nature produce too much acid, and require stronger digestive organs, in order to be changed into a good alimentary fluid.

Dr. Buchan farther observes, that “consumptions so common in England, are in part owing to the great use of animal food.” To this assertion no one will give his assent, who is acquainted with that class of men, who carry on the business of butchers, among whom it is as rare to hear of a consumptive person, as it is to find a sailor troubled with the hypochondriasis. I must quote another observation of this gentleman, to which I cannot implicitly subscribe. Having remark-

ed, that the most common disease in this country is the scurvy; that we find a taint of it in almost every family, and in some a very deep taint, he says,—“ that a disease so general  
“ must have a *general cause*, and there is *none*  
“ *so obvious*, as the great quantity of animal  
“ food devoured by the natives. As a proof,  
“ that scurvy arises from this cause, we are in  
“ possession of no remedy for that disease equal  
“ to the free use of fresh vegetables.” He likewise remarks, “ that the choleric disposition of the English is almost proverbial,  
“ and if he were to assign a cause of it, it  
“ would be their living so much on animal  
“ food;” and finally, that “ there is no doubt  
“ but this induces a ferocity of temper unknown to men, whose food is chiefly taken  
“ from the vegetable kingdom.”

There is much truth mingled with much fallacy in these assertions. I will allow, that animal food predisposes people to scorbutic complaints, and that it renders men more bold and sanguinary in their temper; but there are a variety of other causes which produce a similar effect. Nor are the English so choleric a people as the Italians and Turks, both of whom, though sparing in the use of animal food, are uncommonly vindictive. It is farther not to be imputed to the consumption of flesh-meat, or the want of vegetables alone, that the scurvy is so frequent in this country, both on land and at sea. There appears to me to exist a powerful cause, to which people pay very little attention, and from which the scurvy more frequently derives its origin than from

any other ; the difference of food being in fact only a concurrent cause.

If we consider the very sudden and frequent changes of temperature in our climate ; if we compare the present mode of living with that of our ancestors, who did not interrupt the digestion of one meal by another, such as our rich luncheons in the forenoon, and our tea and coffee in the afternoon, when the digestive organs are, as it were, drowned in these favourite liquids ;—if, farther, we reflect upon the irregular manner in which our time of repose is arranged, so that we spend a great part of our life in the unwholesome night-air, partly at late suppers, and partly in the modern practice of travelling at night ;—if all these circumstances be duly weighed, we cannot be at a loss to discover a more general cause of scorbutic complaints, than that of eating too much animal food.

After these reflections, it will not be difficult to comprehend, that the most important of the human functions is materially injured, by these habitual irregularities. I allude to the *insensible perspiration* which is so far from being encouraged and supported by such conduct, that the noxious particles, which ought to be evaporated, are daily and hourly repelled, again absorbed by the lacteals, and reconducted to the mass of the circulating fluids. Here they can produce no other effect than that of tainting the humours with acrimonious particles, and disposing them to a state of putrescency and dissolution, which is the leading symptom of scurvy. Upon the minutest inquiries among sea-faring people, as well as the

inhabitants of the country, I have been informed, that those individuals, who pay due attention to the state of their skin, by wearing flannel shirts and worsted stockings, and by not exposing themselves too often to night-air, or other irregularities, are seldom, if ever, troubled with scurvy.

To return to the subject of animal food and its effects, it deserves to be remarked, that a too frequent and excessive use of it disposes the fluids to putrefaction, and, I believe in some sanguine temperaments, communicates to the mind a degree of ferocity. Nations living chiefly upon the flesh of animals, like the Tartars, are in general more fierce than others; and the same effect is manifest in carnivorous animals: they emit a very disagreeable smell, and both their flesh and milk has an unpleasant and disgusting taste. Even a child will refuse the breast, when its nurse has eaten too much animal food. Those who eat great quantities of meat, and little bread or vegetables, must necessarily acquire an offensive breath. It appears, therefore, to be most suitable and conducive to health, to combine animal with vegetable food, in due proportions. This cannot be minutely ascertained, with respect to every individual; but, in general, two thirds or three fourths of vegetables, to one third or fourth part of meat, appears to be the most proper. By this judicious mixture, we may avoid the diseases arising from a too copious use of either. Much, however, depends on the peculiar properties of alimentary substances, belonging to one or the other of the different classes, which we have now to investigate.

*Of Animal Food.*

It may serve as a preliminary rule, that *fresh meat* is the most wholesome and nourishing. To preserve these qualities, however, it ought to be dressed so as to remain tender and juicy; for by this means it will be easily digested, and afford most nourishment.

The flesh of *tame* animals is, upon the whole, preferable to *game*; and although the latter be, in general, more mellow, and easier of digestion, it does not contain the sweet jelly, and mild juices, with which the former is almost uniformly impregnated.

By the usual mode of dressing victuals, they lose a considerable part of their nutritious quality, and become thereby less digestible. *Raw meat* certainly contains the purest and most nourishing juice. We do not, however, eat raw flesh, but there are some substances which are frequently consumed in a state nearly approaching to that of rawness. Such are the Westphalia hams, Italian sausages, smoked geese, salted herrings, and the like.

Various modes of preparing and dressing meat have been contrived, to render it more palatable, and better adapted to the stomach. By exposure to the air, flesh becomes more soft, which obviously is the effect of incipient putrefaction; for, by this process, the volatile particles of ammoniacal salt are disengaged, and it is rendered more agreeable to the taste.

Pickled and smoked meats,\* so commonly used in the northern and eastern countries of Europe, acquire an unnatural hardness, and communicate a great degree of acrimony to the fluids of the human body. By *boiling*, flesh is deprived of its nourishing juice, as the gelatinous substance of the meat is extracted, and incorporated in the broth; and it is thus converted into a less nutritive and more oppressive burden for the digestive organs; because the spirituous and balsamic particles are too much evaporated during the boiling. The *broth* indeed contains the most nourishing part of it, but it is too much diluted to admit of an easy digestion. A better mode of dressing meat is *roasting*, by which its strength is less wasted, and the spirituous particles prevented from evaporating; a crust is soon formed on its surface, and the nutritive principle better preserved. Hence, one pound of roasted meat is, in actual nourishment, equal to two or three pounds of boiled meat.

The boiling of animal food is frequently performed in open vessels; which is not the best method of rendering it tender, palatable, and nourishing: close vessels only ought to be used for that purpose. The culinary process called *stewing* is of all others the most profitable and nutritious, and best calculated to preserve

\* It is remarkable, that *smoked meat* is more readily digested in a *raw* than boiled state. Experience affords ample proof of this assertion, especially in the articles of smoked hams and sausages; for the soft gelatinous fluids which, by the joint processes of pickling and smoking, have been effectually decomposed, or converted into a neutral substance consisting of ammoniacal salt combined with animal jelly, are completely extracted by boiling, so that little more than the dry fleshy fibres remain behind.

and to concentrate the most substantial parts of animal food.

When we expose articles of provision to the fire, without any addition of moisture, it is called *baking*. That such articles may not be too much dried by evaporation, they are usually covered with paste. Thus the meat, indeed, retains all its nutritive particles, becomes tender and easily digestible; but the paste is the more detrimental to the stomach, as it generally consists of an undue proportion of butter, which cannot be readily digested in that state. When meat is *fried*, it is in some degree deprived of its substance; but, if the fire be strong enough, a solid crust will soon be formed on its surface, by which the evaporation will be checked, and the flesh rendered mellow: the butter, or other fat used to prevent its adherence to the pan, gives it a burnt or empyreumatic taste, and renders its digestion in the stomach rather difficult.

Vegetables are, in general, not so readily digested, as even hard and tough animal substances; which from their nature are more speedily assimilated to the body; but the flesh of young animals, with a proportionate quantity of wholesome vegetables, is the diet best adapted to our system. The flesh of fattened cattle is by no means wholesome; these animals lead a sluggish and inactive life, and as they are surrounded in their dungeons by a bad and putrid air, they consequently do not afford fluids salutary for the stomach.

Though fat meat is more nourishing than lean, fat being the cellular substance of animal

jelly, yet to digest this oily matter, there is required, on account of its difficult solubility, a good bile, much saliva, and a vigorous stomach. To prevent any bad effects, we ought to use a sufficient quantity of salt, which is an excellent solvent of fat, and changes it into a saponaceous mass.

Luxury has introduced an unnatural operation, which makes the flesh of certain animals at once delicate and nutritious; but the flesh of the same animals is still more wholesome in their unmutilated state, before they have been suffered to copulate. The mucilaginous and gelatinous parts of animals alone afford nourishment; and according to the proportion of these contained in the meat, it is more or less nourishing. We find mucilage to be a principal constituent in vegetable, and jelly or gluten in animal bodies: hence farinaceous substances contain the most of the former, and the flesh of animals most of the latter. A substantial jelly, as for instance that of calf's feet, is more nourishing than a thin chicken broth; but it is more difficult to be digested.

In summer, it is advisable to increase the proportion of vegetable food, and to make use of acids, such as vinegar, lemons, oranges, and the like; the blood being in that season much disposed to putrescency. The man who continually takes nourishing food, is liable to become fat and plethoric; while on the contrary the parsimonious, or the religious fanatic, from their abstinence, become thin and enfeebled: hence the medium, or a proper mixture of both

vegetable and animal nutriment, seems to be most conducive to health. I cannot sufficiently recommend the following caution to those who are frequently troubled with a craving appetite: the more food the stomach demands, it ought to be the more sparingly furnished with strongly nourishing substances, in order to avoid obesity, or fatness; and much vegetable food is in this case required, to counteract that disposition to putrescency, which the frequent eating of nutritive substances necessarily occasions.

There are people who feel the sensation of hunger in a painful degree, which generally arises from too much acid being generated in the stomach. A vegetable diet would be prejudicial to such individuals; they ought to increase the proportion of animal food; and dishes containing oily substances, in general, agree well with them. Bread and butter is useful to such persons, in order to neutralize their acid acrimony, and at the same time, to change the fat into a more soluble saponaceous substance. The cause of this acid is frequently a weakness in the stomach, which cannot be cured in any other manner, than by strengthening bitters, and articles of nourishment that are mildly astringent, and promote warmth in the intestines; and in this respect, cold meat, as well as drink, is preferable to hot.

The jelly of animals being the very substance, which renovates the solid parts, is obviously serviceable and necessary to nourish the human body. As, however, each kind of an-

imal has its peculiar jelly and fat, which can be nourishing only when assimilated to our nature by the digestive organs; and as the different parts of animals require different degrees of digestion, it will be necessary to enter into more minute inquiries, respecting these particulars.

Experience informs us, that the flesh and intestines of young animals afford a thin, easily digestible, and nutritive jelly. Old animals, hard and tough flesh, cartilages, sinews, ligaments, membranes, membranous thick intestines, and the sinewy parts of the legs, produce a strong and viscid jelly, which is difficult to be digested and assimilated to our fluids. The more healthy the animal is, the stronger will be the jelly, and the more nourishing its fluids. The most nutritious flesh is that of animals living in the open air, having much exercise and a copious mass of blood, and particularly, if they are kept in dry and warm places. The alkali contained in the flesh of carnivorous animals is the cause of the bad nourishment it affords, and of the injurious consequences attending its use. From the similarity in the structure of quadrupeds to that of man, it may be conjectured, that their jelly is similar to ours; that such as are fed upon milk give the best nourishment; and that the flesh of female animals is more easily digested, but less nutritious than that of the castrated males, which in every respect deserves the preference. After quadrupeds, we may class birds, in point of nourishment; then fishes; next to them amphibious animals; and lastly insects.

As animal food is strongly nourishing, it generates blood, fat, and spirituous particles, in a much greater quantity than vegetable aliment. The activity and courage of carnivorous animals prove, that the feeding upon flesh gives spirit and strength, heats the body, and preserves the muscles in a lively state. For these reasons, much animal food is improper for those of a full habit and abundance of blood, for febrile patients, and those who are disposed to hemorrhages or losses of blood. The phlegmatic, on the contrary, and those of thin watery fluids, and a weak digestion, may with safety eat more animal than vegetable food.—Of the different kinds of flesh, game is most heating; that of young domestic animals least; for instance, of calves and chickens, particularly when they are eaten with vegetable substances containing an acid, such as sorrel, asparagus, &c. That animal food disposes to putrescency, I have before remarked; hence it ought to be sparingly used in summer, and in hot climates. Persons, whose fluids already show a putrid tendency, and who are reminded of it by frequent eruptions of the skin, or who are already corpulent, should abstain from a too copious use of animal food.

I have also observed, that the flesh of carnivorous animals has an extraordinary tendency to putrefaction, as is obvious from their fetid perspiration; that it contains an acrimony and alkalescency foreign to our nature; and that it does not afford mild nutriment. The flesh of granivorous animals, partaking more of the vegeta-

ble principle, is less subject to putrefaction; and though it be less nourishing, and less abounding in spirituous particles than that of the former, yet it supplies us with a milder and more congenial aliment.

The flesh of fishes, being, like the element in which they live, most distinct from the nature of man, is of all others the least wholesome and nutritive.

The tame quadrupeds that suck the mother's milk, if they rest too much and are quickly fed, do not afford a good and well-prepared food. In animals, which have tender muscles and little exercise, those parts are probably the most wholesome which are more in motion than others, such as the legs and head.

Poultry furnishes us with the most valuable aliment, as it has excellent and well-digested fluids, from its more frequent exercise and constant residence in the open and pure air. Some animals, when young, have tough and spongy flesh, which is mollified and improved by age, and can be eaten only after a certain time, such as eels and carp. Others are hard when young, and must be used early, because that hardness increases with their age; as the haddock, and many other species of fish. The flesh of old animals, that have less muscular parts than the young ones of the same species, is indigestible; and we may lay it down as a general rule, that the more the flesh of an animal is disposed to putrefaction, it is the more unwholesome.

*Veal*, although affording less nutriment than the flesh of the same animal in a state of ma-

turity, contains many nourishing and earthy particles, and produces little or no disposition to flatulency: it ought, however, not to be brought to market, till the calf is at least six weeks old, and fed, if possible, on the mother's milk. Veal is not of a heating nature, and may therefore be allowed to febrile patients in a very weak state, especially with the addition of some acid;—it is also the most proper food for persons who have a disposition to hemorrhages. On account of the great proportion it contains of viscosity, persons disposed to phlegm and complaints of the abdomen, ought to abstain from its use. For these reasons, we recommend veal-broth, especially in pectoral and inflammatory diseases. The lungs, the liver, and the tongue of veal, are less viscous than the flesh; and being easily digested, soft, and mild, they are very proper for sick persons and convalescents. No animal fat is lighter than this; it shows the least disposition to putrescency; and it may therefore be used, in preference to any other, by persons of a scorbutic taint. The fat of veal should not be boiled; the operation of boiling softens its fibres too much; dissolves the jelly, and renders it unfit for digestion. But, by roasting, it becomes drier, and somewhat more solid; both the serous and thick parts of the blood are incrassated in the external vessels, the fibres are dried up, and a crust is formed, beneath which the fluids are moved, and changed into vapour, by the continued application of heat. In this operation all the fibres lie, as it were, in a vapour-bath, and are perfectly softened without losing

any of the jelly. Roasting, therefore, may be considered as the best mode of preparing this meat. Baking also forms a crust over it like roasting, but the fat incrassated by heat may occasion inconvenience, as it possesses an oily acrimony, and is with difficulty digested. For the same reason, it is improper to eat the burnt crust of any meat, of which some people are particularly fond, though it contains an empyreumatic oil, highly pernicious, and altogether indigestible by the stomach. For roasting, the mellow and juicy kidney-piece, or the breast of veal, deserves the preference: the leg is too dry and fibrous; it requires good teeth to be well chewed, renders the use of tooth-picks more necessary than any other dish, and is frequently troublesome to the stomach. In short, veal does not agree well with weak and indolent stomachs, which require to be exercised with a firmer species of meat. When boiled, it is but slightly nourishing, and when we make a meal upon veal alone, we soon feel a renewal of the cravings of the appetite. For removing the acid from the stomach, veal is the most improper article of diet. But to patients recovering from indisposition, first may be given veal-broth, then roasted veal, and lastly beef; the properties of which we shall now consider.\*

*Beef* affords much good, animating, and strong nourishment; and no other food is

\* A horrid custom has been introduced by luxury, of feeding calves cooped up in boxes so small as to prevent all motion, and from which light is totally excluded: by this cruel refinement their flesh is, by epicures, thought to be rendered more white and delicate; but if humanity does not revolt at this practice, those who have any regard for health should avoid the use of the flesh of an animal reared in this unnatural and putrescent state.

equal to the flesh of a bullock of a middle age. On account of its heating nature it ought not to be used, where there is already an abundance of heat; and persons of a violent temper should eat it in moderation. It is peculiarly serviceable to hard-working men; and its fat is nearly as easily digested as that of veal.

It deserves, however, to be remarked, that the tongue, the intestines or tripe, and the sausages made of beef are more difficult of digestion than the muscular part; and that it would be extremely improper to give them to nurses, children, or lying-in women.

The meat of old bullocks, fed and kept in the stall, when unfit for labour, is scarcely digestible; it is burdensome to the stomach, and contains, as well as that of old cows, (which is still worse) no wholesome fluids. Though beef be more frequently eaten boiled, yet it is more nourishing and digestible when roasted. Finally, beef is almost the only species of animal food, with which the stomach is not easily surfeited, and which is in proper season throughout the whole year.

*Pork* yields a copious and permanent nourishment, which does not disagree with the robust and laborious, but which, from its abundance of acrid fat, is not wholesome to persons of a weak stomach or sedentary life; as these animals live and are fed in sties without exercise, and in an impure air. From the want of clean water, their flesh acquires a tough and strong consistence, and is indigestible but by a strong and healthy bile. Persons who have

impure fluids, and a tendency to eruptions, as well as those who have wounds or ulcers, should refrain from the use of pork; for this food will dispose them to inflammation and gangrene: it is equally improper in a catarrhal state of the breast, in weak stomachs, coughs, and consumptions.

The antient physicians considered pork as the best and most nutritious meat, if supported by proper digestive powers. But they were certainly mistaken in this supposition; for, although its quality is such as renders a smaller quantity of it necessary to satisfy the cravings of the stomach, yet veal and beef, taken in increased proportions, afford equal, if not more nourishment, and doubtless a more wholesome supply of animal jelly, than pork, under similar circumstances of the individual, would produce. By allowing these animals clean food, and the enjoyment of pure air and exercise, their flesh might be much improved in salubrity; but the farmer is little anxious about the quality of the meat, if he can produce it in greater quantity, which he is certain to obtain from the present unnatural mode of feeding swine. People of delicate habits may sometimes eat pork sparingly; but it is an erroneous notion that it requires a dram to assist its digestion; for spirituous liquors may indeed prevent, but cannot promote its solution in the stomach. It would be much better to drink nothing after pork for a short time, as it is usually very fat, and this fat is more subtle and soluble than any other, and has nothing in it of the nature of tallow.

Pork, eaten in moderation, is easily digested. With those whose digestive organs are weak, no other species of meat agrees in general so well, as a small quantity of this. Hence the objections made against it relate more to the quantity than to the quality or substance; for if it be eaten in too great quantity, it is apt to corrupt the fluids, and to produce acrimony. We ought therefore to eat it seldom and sparingly, and the appetite which many people have for this food should be kept within moderate bounds. The most proper additions to pork, are the acidulated vegetables, such as gooseberry or apple-sauce; which not only gratify the palate, but correct its properties, neutralize, in a manner, its great proportion of fat, and thus operate beneficially on the alimentary canal.\*

The flesh of *wild hogs*, as they have more exercise than the tame, and do not live upon substances so impure and corrupted, is more palatable, more easily digested, less tough, not so fat, and on account of their residence in the open air, is, like all game, purer, but more liable to putrefaction.

\* There is little to be apprehended from the worms in swine, which, according to a late discovery of the celebrated Naturalist Görze, in Germany, are natural to these animals. They reside in the cartilaginous vesicles of the liver, and when these vesicles burst in very hot weather, while the worms are yet extremely small, they pass into the blood with other fluids, and gradually increase in size. But there is no instance, that they have produced diseases, unless arising from disgust. Should it however, be found, that these animalculæ become visible externally, and in great quantities, the butchers ought not to be permitted to kill such hogs, as the flesh easily acquires an uncommon acrimony, is much disposed to putrify, and consequently, improper to be used as food.

*Smoaked hams* are a very strong food. If eaten at a proper time, they are a wholesome stimulus to the stomach; but boiling them renders the digestion still more difficult.—In *salt-ing* any kind of meat, much of its jelly is washed away, the fibres become stiff, and thus heavier for the stomach. The salt penetrates into the jelly itself, prevents its solution in the alimentary canal, and consequently makes it less conducive to nutrition.—By *smoaking*, the fibres of meat are covered with a varnish, the jelly is half burnt, the heat of the chimney occasions the salt to concentrate, and the fat between the muscles to become rancid; so that such meat, although it may stimulate the palate of the epicure, cannot be wholesome.

*Sausages*, whether fried or boiled, are a substantial kind of nourishment; they require, therefore, a strong bile to dissolve them, and a good stomach to digest them. They are not of an acrid nature, provided they have not too much pepper in their composition, and be closely filled, so as to contain no air. *Blood Sausages*, usually called Black Puddings, consisting of bacon and coagulated blood, which is totally indigestible, are a bad and ill-contrived article of food; and still more so, if they have been strongly smoked, by which process the blood becomes indurated, and the bacon more rancid: thus prepared, nothing can be more pernicious and destructive to the best fortified stomach. The spices usually added to sausages, correct, in some degree, their hurtful properties, but are insufficient to counteract the

bad and highly disagreeable effects of rancid substances.

*Bacon* is chiefly hardened fat, accumulated in the cellular texture under the skin, and is of all meat the most unwholesome; it easily turns rancid in the stomach, or it is so already by long hanging, and is particularly pernicious to those who are subject to the heartburn.

*Lard*, a softer fat collected from the entrails and the mesentery of hogs, becomes easily rancid, and is otherwise relaxing to the digestive organs: for which reasons, it is seldom used in English cookery.

The *mutton* of sheep fed on dry pastures is a better and more nourishing food than that of others reared in moist places. Those also fed upon the sea-shore are excellent meat, the saline particles which they imbibe giving at once consistency and purity to their flesh. The flesh of rams is tough and unpleasant, but that of ewes and still more that of weathers, is of a rich, viscous nature. Young mutton is juicy and easily digested, but it is rather tough, and has not that balsamic alimentary juice peculiar to sheep above a certain age. The best mutton is that of sheep not less than three, and not above six years old. Under three years of age, it has not attained its perfection and flavour.

A roasting piece of mutton ought to be exposed to the open air for several days, according to the weather and season; it affords then a palatable dish, which is easily digested, and agrees with every constitution. But the fat of mutton is almost indigestible; for it easily co-

agulates in the stomach, and oppresses that organ: hence the lean part of mutton is more nourishing and conducive to health.—The feet of this animal are nourishing, on account of their jelly, and are of great service for injections, in those diseases which originate from acrimony in the intestines.

*Lamb* is a light and wholesome food, not so nutritious as mutton, but extremely proper for delicate stomachs. The vegetables most proper to be eaten with lamb are those of an acidulated nature, as gooseberries, sorrel, and the like. It is fashionable to eat this meat when very young; but a lamb that has been allowed to suck six months, is fatter and more muscular, and in every respect better, than one which has been killed when two months old, and before it has had time to attain its proper consistency.

*House Lamb* is a dish, prized merely because it is unseasonable. Like all animals reared in an unnatural manner, its flesh is insipid and detrimental to health.

The flesh of *Goats* is hard, indigestible, and unwholesome;—hence the meat of kids only is esculent, being more easily digested, and yielding a good nourishment.

The flesh of *Deer* (*Venison*), and that of *Hare*, contain much good nutriment; but, to the detriment of health, these animals are generally eaten when half putrified, though they are naturally much disposed to putrescency. When properly dressed, they afford a mellow food, and are readily assimilated to our fluids. But as wild animals, from their

constant motion and exercise, acquire a drier sort of flesh than that of the tame, it should never be boiled, but always ought to be roasted or stewed. From the same cause, the fluids of wild animals are more heating, and more apt to putrify, than those of the domestic. Persons, therefore, who already have a predisposition to scurvy or other putrid diseases, should not eat much game, particularly in summer. This pernicious tendency of game may be corrected by the addition of vinegar, acid of lemons, or wine; salad also is very proper to be eaten with it. Those parts of wild animals, which have the least motion, are the most juicy and palatable: the back, for instance, is the best part of a hare.

The *lungs* of animals contain nothing but air and blood-vessels, which are very tough, solid, difficult to be digested, and afford little nourishment. Besides, on account of the encysted breath, and the mucus contained in them, they are in reality disgusting. The *liver*, from its dry and earthy consistence, produces a vitiated chyle, and obstructs the vessels; hence it requires a great quantity of drink, and ought never to be used by the plethoric: the blood-vessels and biliary parts adhering to it, are particularly disagreeable. The *heart* is dry, scarcely digestible, and not very nourishing. The *kidneys* also are acrid, hard, tough, and not easily digested by the delicate. These intestines, however, of young animals, such as calves and lambs, produce aliment sufficiently wholesome.

The *fat* and *marrow* of animals afford, indeed, solid and elastic alimentary juice, increase the blood and fluids, but are difficult to be digested; they require a powerful stomach, perfect mastication, sufficient saliva and bile, and agree best with persons who take much bodily exercise. If not duly digested, they occasion diarrhœa, weaken the stomach and the bowels, stimulate too much by their uncommon acrimony, and easily turn rancid, especially when eaten together with meat much disposed to putrefaction. They are apt to destroy the elastic power of the first passages, as well as of the whole body, to produce the heart-burn, cramp of the stomach, and head-ach, particularly in irritable habits, and, at length, to generate an impure and acrimonious blood.

The *blood* of animals is completely insoluble, consequently in no degree nourishing.

The *milk* is of very different consistence and properties, not only according to the different kinds and species of animals, but also in the same species, in consequence of the difference in feeding, constitution of body, age, time of milking, and so forth. Milk takes the lead among the articles of nourishment. It affords the best nutriment to persons whose lacteals and blood-vessels are too weak for deriving nourishment from other provisions; because it is already converted into an alimentary fluid in the intestines of an animal.

Nature has appointed this nutritive substance milk, as the food of children; because infants, on account of their growth, require

much nourishment. From this circumstance, we may also conclude, that milk is easily digested by healthy stomachs, since at this early age the digestive powers are but feeble. Milk-porridge, however, as well as those dishes in the composition of which milk and flour are used, have a manifest tendency to obstruct the lacteals or milk-vessels of the intestines and the mesentery; a circumstance which renders them extremely unwholesome, particularly to children. Milk, although an animal production, does not readily undergo putrefaction; as it is possessed of the properties of vegetable aliment, and turns sooner sour than putrid. It affords a substantial alimentary fluid; and hence it is of service to persons enfeebled by dissipation or disease.

As the milk of animals contains more cream than that of the human breast, it ought to be diluted with water, when given to infants. It combines both saccharine and oily particles, and is a very serviceable article of diet, in a putrescent state of the blood, in inveterate ulcers, and in the scurvy. It is well calculated to assuage rigidity, cramps, and pains, being a diluent and attenuating remedy, *especially in the state of whey*; it promotes perspiration and evacuation in general, and is highly beneficial in spitting of blood, hysterics, hypochondriasis, dysentery, inveterate coughs, convulsive affections, the putrid sore throat, and in complaints arising from worms. Milk is also used for fomentations, baths, emollient injections, and washes for inflamed and sore parts. If intended as a medicine, it should be drunk immedi-

ately or soon after it comes from the cow. Through boiling, and even by long standing, the best and most nutritious balsamic particles evaporate.

The milk to be employed for diet in diseases ought to be taken from healthy and well-nourished animals; for we see in children how much depends on the health of the mother, and how suddenly they suffer from an unhealthy or passionate nurse. In Spring and Summer, the milk is peculiarly good and wholesome, on account of the salubrious nourishment of herbs. In Winter it is much inferior. It is farther necessary, that the animal furnishing the milk should be kept in the free air, and have daily exercise. In order to obtain good milk, it would be adviseable, for persons who have the opportunity, to keep a cow; for, besides the adulteration of that which is sold, cows are frequently milked at an improper time, by which the milk is much injured, and cannot be wholesome.

The best milk is obtained from the cow at three or four years of age, about three months after producing the calf, and in a serene Spring morning. Good cow's milk ought to be white, without any smell; and so fat, that a drop being allowed to fall on the nail will not run down in divisions. It is lighter, but contains more watery parts than the milk of sheep and goats; while, on the other hand, it is more thick and heavy than the milk of asses and mares, which come nearest the consistence of human milk. Ewe's milk is rich and nourishing; and it yields much butter, which is fo

unfavorable, that it cannot be eaten. Both this and goat's milk produce much cheese, which is tough, strong, pungent, and difficult to be digested.

As goats are fond of astringent herbs, their milk is superior in strength to that of other animals; hence it has been sometimes used with the most happy success in hysterical cases. Goat's whey and ass's milk are chiefly used in pulmonary consumptions; where ass's milk cannot be got, that of mares may be used as a substitute.\*

Milk consists of caseous, butyraceous, and watery parts; that which contains a well-proportioned mixture of the three, is the most wholesome. But this mixture is not always met with in due proportion—frequently the two first, namely, cheese and butter, predominate; and in this case it affords indeed a strong food, but is difficult of digestion. If the water form the greatest proportion, it is then easily digested, but less nourishing. This is particularly the case with ass's milk, which, more than any other, affects the urine and stool, while it has a tendency to purify the blood.

On account of the warmth, and the mechanical process of the digestive organ, joined to the chemical properties of the acid generated in it, milk necessarily coagulates in every stomach. The caseous part is dissolved, and dilut-

\* *Artificial ass's milk*, not inferior in its properties to the natural, may be made by the following process:—Take of eryngo-root or sea-holly, and pearl barley, each half an ounce; liquorice-root three ounces; water two pounds or one quart; boil it down over a gentle fire to one pint, then strain it, and add an equal quantity of new cow's milk.

ed by the admixture of the digestive liquors, and thus prepared for being changed into a pure chyle or milky fluid. Indeed, it makes no difference, whether we take cream, cheese, and whey in succession, or whether we consume them united in the mass of the milk: in the former case, the separation takes place without, and in the latter within the stomach.

It is however improper to eat acid substances together with milk, as this mass would occasion fermentation and corruption: while, on the contrary, the natural coagulation is only a separation of the constituent parts, not a transition of this mild fluid into the stage of acid fermentation; for this is prevented by the saponaceous digestive liquors, though the milk itself be coagulated.

Yet milk is not a proper food for the debilitated, in all cases; nay, under certain circumstances, it may even be hurtful. It does not, for instance, agree with hypochondriacs; as it occasions cramp of the stomach, cholic, heartburn, and diarrhoea. Febrile patients, whose weak organs of digestion do not admit of nutritive food, and whose preternatural heat would too easily change the milk into a rancid mass, must abstain from it altogether. It disagrees also with the plethoric, the phlegmatic, and the corpulent; but particularly with tipplers, or those addicted to strong spirits. Its butyrous and cheesy parts may obstruct digestion and oppress the stomach.

Lastly, *sour milk* is unfit for use, on account of the chemical decomposition which has taken place in its constituent parts, and because it

can hardly be digested by the most powerful stomach: even sweet milk ought not to be eaten together with flesh meat, and in most cases the whey is preferable to the milk.

With these exceptions, milk is an excellent species of diet, which does not require strong digestive organs, unless a variety of other substances be eaten along with it. On the contrary, persons much reduced in bodily vigour have received benefit, and in a great measure been cured, by eating milk only. We daily observe that children at the breast, with the natural inclination to acidity and viscosity, feel its bad effects only, when, together with milk, they are fed upon cakes, pastry, gingerbread, and other trash. Milk being free from all acrimony, produces wholesome, light, and sweet blood. Sugar and salt are almost the only proper spices to be added to it.

*Cream* is exceedingly nourishing, but too fat and difficult to be digested, in a sedentary life.

*Butter* possesses at once all the good and bad properties of expressed vegetable oils; it is the sooner tainted with a rancid bitter taste, if it be not sufficiently freed from the buttermilk, after churning.—Bread and butter require strong and well-exercised powers of digestion.—It is a most pernicious food to hot-tempered and bilious persons, as well as to those of an impure stomach. The good quality of butter is marked by a very fat shining surface, yellow colour, agreeable flavor, and sweet taste.\*

\* I am disposed to think it would be beneficial to society, if the making of *butter* were strictly prohibited, as well as the impor-

*Butter-milk* is a species of whey, but contains a great number of butyrous particles. If we drink it while new and sweet, it is refreshing and cooling.

Before I quit the subject of milk, I cannot omit remarking, that this fluid, besides the qualities before enumerated, contains some spirituous parts, *in a latent state*, with which our chemists are little acquainted. And although these parts cannot be disengaged from the milk, and exhibited in a separate form, yet it is certain, that the Persians, and other inhabitants of the East, prepare a kind of wine from milk, which possesses all the properties of intoxicating liquors. Such is the report of respectable travellers; but I am inclined to suspect, that these Orientals make some addition to the sweet whey, after the caseous parts are separated from it, by which they induce a vinous fermentation. Whether they add honey, sugar, or any mucilaginous vegetable, containing the saccharine principle, I shall not attempt to decide: but it is well known, that the Chinese ferment and distil a liquor from a mixture of rice and veal, which is not unpleasant when new.

*Cheese* is obtained from the tough part of the milk, which subsides in coagulation, and which must be completely freed from the whey. All cheese is difficult to be digested,

tation of salt butter into every civilized country, where the hurtful properties of it are sufficiently understood.—*Melted fat*, or the *drippings* of baked and roasted meat, is equally, if not more pernicious to the stomach, than even stale butter, and both ought to be used only for greasing cart wheels, and not for injuring human organs.

being the coarsest and most glutinous part of the milk, which the healthy and laborious only can concoct in their stomach. To others, it is too heavy; it imparts a thick and acrid chyle to the blood; it hardens in a weak stomach, and accumulates an indurated earthy lump. When eaten new, in any considerable quantity, it corrupts the fluids; and if old, it becomes putrid. In small quantities after dinner, it can do no great harm, but it is absurd to suppose that it assists digestion; its effects, at best, being of a negative kind, that is, by producing a temporary stimulus on the stomach: and even this is the case only with sound old cheese which is neither too fat, nor too far advanced in the process of putrefaction.

Toasted cheese, though more agreeable to some palates than raw, is still more indigestible. Cheese, if too much salted, like that of the Dutch, acquires, when old, a pernicious acrimony. The green Cheese of Switzerland, which is mixed with a powder of the wild Melilot, or the *Trifolium Melilotus*, L., and the milder Sage-Cheeses prepared in England, are the almost only kind which may be eaten without injury; and even these should be used in moderation.\*

\* To show the strongly viscid quality of cheese, and what powers of digestion it must require to assimilate it to our fluids, I shall mention a composition which may be useful, as the strongest cement yet contrived, for mending china cups, glasses, and the like. A piece of Cheshire or Gloucester cheese is boiled in three or four different waters, till it form a soft and elastic mass, freed of the whey and other extraneous ingredients. After having expressed all the water from this mass, and while yet warm, it must be gradually rubbed upon a piece of marble, such as is used by

*Birds*, as they move in the purest and most healthy atmosphere, possess the best prepared and most wholesome alimentary substance; yet the flesh of birds, though more easily digested, is less nourishing than that of quadrupeds; as on account of their constant exercise the whole winged tribe have drier muscles, consequently a less nutritious juice. Those birds particularly, which subsist upon worms, insects, and fishes, are not wholesome; and if they frequent swampy and filthy places, their flesh will afford meagre and impure nourishment.

Some parts of fowls are less wholesome than others. The wings of those whose principal exercise is flying, and the legs of those that generally run, are the driest parts of their bodies: hence the breast is, in all, the softest and most nutritive part. Young poultry is preferable to that of some years old, which have very tough muscles, and are heavier to the stomach.

Birds living upon grain and berries are in all respects the best; next, those feeding upon insects; and last of all, that class of birds which preys and subsists upon fishes. These indeed, like all other animals, whose proper food is flesh, are eaten only by savage nations, wild and tame ducks and geese excepted; which, by their strong flesh, and the inclina-

colour-men; and as much unslacked or quick-lime in powder must be added, as will be absorbed by the cheese, without making it too hard. This compound forms the strongest possible cement; if allowed to dry slowly, it is able to withstand fire as well as water.

tion of their fluids to putrescency, are less wholesome than any other bird. Water fowl afford the least beneficial food. In general we find winged animals out of season in Spring; partly because most of them are then pairing, and partly on account of the long journeys of those that are birds of passage, by which they become leaner than at any other time of the year; yet some birds of passage do not arrive in this climate till towards Autumn.

It is remarkable, that most birds, when taken from their wild state, and fed in captivity, such as partridges, larks, and others, lose much of their peculiar flavour, which is also the case with wild quadrupeds. Yet those tame and domesticated fowls and animals, that are well fed in yards and stalls, are generally more fat and muscular than those which are obliged to seek their own food. Old fowls are the most serviceable for broth; or they might be boiled in close vessels, where they can macerate for some hours, till they are completely softened by the steam. Fowls lose much of their fine flavour, if boiled; they are therefore best roasted, except the smaller kinds, which ought to be baked.

All birds living upon grain and berries afford good nutriment, except geese and ducks. The flesh of the goose is unwholesome, especially when fed in small inclosures, without exercise; which practice is sometimes carried so far, as cruelly to nail the animal to a board through the feet, to prevent its motion. Its fat is almost totally indigestible: its flesh produces a very obvious and bad effect upon

wounds and ulcers. It is also pernicious to those who are disposed to inflammatory diseases, and to cutaneous eruptions.—A young hen, or chicken, is a very wholesome dish; its vegetable aliment produces a mild and sweet chyle; and the whiteness of its flesh shows its excellent quality. As it is easily digested, it is a dish to be recommended to the weak and debilitated; and it agrees best with individuals of an acrid and mucous tendency, or such as are troubled with biliary and stomachic disorders.

The Capon is one of the most delicate dishes; if eaten when young, he yields a strong and good chyle; his flesh is not of a heating nature, is not disposed to putrescency, and the fat itself is easily digested. Turkeys, as well as Guinea or India fowls, yield a strong aliment, but are more difficult of digestion than the capon; particularly the legs, wings and fat. These birds, when roasted, are usually filled with some kind of heavy pudding, which is a favourite morsel with many, but requires the strongest digestive powers.—The old prejudices, that the flesh of capons is productive of the gout, and that of sparrows brings on epileptic fits, are too absurd to require refutation.

Among the birds subsisting on insects, there are few eaten, except the various kinds of snipes and starlings. All of them, without exception, consist of hard, unsavoury, and scarcely digestible flesh.

It would be useless to enumerate the various birds living upon fish, which are eaten in other countries. They all have a taste of fish,

and afford a poor aliment. The ducks and geese only are eaten in Britain : of these the former afford the better nourishment, as they are generally not so abundantly fat as the latter, and are permitted to move about in the open air. But they ought not to be suffered to repair to stagnant waters, which they swallow, and which taint their fluids and flesh with qualities detrimental to health.

Next to milk, no nutriment is so simple and salutary as that of bird's eggs, among which those of hens justly deserve the preference, in respect of nourishment, taste, and digestion. The albumen, or the white of eggs, corresponds to our serum, or the water of the blood ; it is dissolved in a warm temperature, but considerable heat makes it hard, tough, dry, and insoluble. The yolk of eggs is more soluble, contains much oil, and is uncommonly nourishing, but has a strong tendency to putrefaction : hence eggs must be eaten while fresh. People of a weak stomach ought to eat no kind of food easily putrescible, consequently no eggs. To those, on the contrary, who digest well, a fresh egg, boiled soft, (or rather stewed in hot water, from five to ten minutes, without allowing it to boil) is a very light, proper, and, at the same time, nourishing food.

Hard-boiled eggs, fried eggs, pan-cakes, and all artificial preparation of eggs, are heavy on the stomach, corrupt our fluids, and are unwholesome. The eggs of ducks and geese ought not to be eaten, but by persons of the most active and powerful stomachs. All eggs

require a sufficient quantity of salt, to promote their solution in the digestive organ ; yet butter renders them still more difficult of digestion : hence it is equally absurd and pernicious to use much butter, with a view to soften hard boiled eggs. We cannot be too circumspect in the use of eggs, as to their freshness ; for there are examples, of persons, after having used corrupted, or only tainted eggs, being seized with putrid fevers.\*

\* Various modes of preserving eggs have been contrived in domestic life. To prevent the external air from pervading the egg, is the principal requisite. With this intention some smear them with butter, others pack them in bran or common salt ; the farmers in Germany suspend them in fresh river-water, by means of a net ; but all these methods are troublesome and uncertain. The best way of preserving them to any length of time, is to place them in a very strong lime-water, to leave some lime at the bottom of the vessel, and if the water should become turbid, to pour it off and supply it with a fresh infusion. This may be done with boiling water, to dissolve more of the lime ; but it must be allowed to become perfectly cold before the eggs are placed in it.

I shall here take notice of a method lately contrived to preserve animal and vegetable substances, to almost any length of time, without salting or pickling. A Mr. DONALDSON has obtained his Majesty's Letters Patent, for inventing a powder, which is said to possess the extraordinary virtues of preserving the flesh of animals, as well as vegetable roots, to an indefinite length of time. If this be true, (though I am much inclined to doubt it) it is easy to conceive how the Egyptian mummies could be preserved for several thousand years. Our East and West India vessels may now save themselves the trouble of taking live stock on board.

In order to afford an opportunity of judging of the merits of Mr. Donaldson's powder, or of giving it a fair trial, I shall briefly state its component parts, as recorded in the Patent—Any quantity of vegetable gum, such as Gum-Arabic, or that of cherry-trees, in fine powder, is mixed with an equal quantity of fine flour of wheat or barley : this is made into a paste, and baked in an oven, contrived for that purpose, with a very gentle heat, so as to prevent it from forming a crust. The dry mass is again reduced to a fine powder, and this is the great and astonishing *preservative*.—Either animal or vegetable substances surrounded with this powder, and packed in close boxes in that state, according to the professions of the Patentee, keep fresh, and free from corruption, for almost any length of time.—*Relata refero.*

*Fish*, though of a tender flesh, afford upon the whole but a weak nourishment. They are more or less difficult to digest, according to the different kinds of water in which they live. Being of all animal substances the most putrescible, they are much inferior in quality to birds and quadrupeds, on which account they ought not to be eaten by febrile patients and convalescents. Their fat is still more insoluble and indigestible than that of other animals, and readily turns rancid. On account of their indifferent qualities, no satiety is more noxious than that of fish.

Acid saucers and pickles, calculated to resist putrefaction, render fish somewhat better, and more wholesome for the stomach, while butter has a tendency to prevent digestion, and to promote the corruption of their flesh. On the contrary, spice and salt, used in moderate quantities, stimulate the fibres of the stomach to exert their action, and facilitate the digestive process.

Fish dried in the open air, and afterwards boiled soft, are easily digested; but all *salted* sea-fish, as well as smoked fish, are injurious to the stomach, and afford little nutrition. The same remark, though in an inferior degree, applies to fish preserved in vinegar and spice. In general, the heads and tails containing the least fat, are the lightest parts for digestion, as on the contrary the belly is the heaviest. Such as have a tender flesh are sooner digested than those of a hard and tough consistence.

The soft and mucilaginous fishes, like the eel, are partly composed of an oily slime, part-

ly of tough fibres, and are consequently not easily digested. Those living in ponds, ditches, and other standing waters, are certainly less wholesome than river fish, whose exercise is greater, and whose natural element is purer. For standing water easily putrifies, and the fish lodging in the mire of such reservoirs, continually feed upon the putrid parts. But the same kind of river fish is also of different qualities, according to their different nourishment. Thus, those caught in rivers contiguous to great towns, are less salubrious than others; because they necessarily receive great quantities of the impurities thrown into such rivers.

Salt-water fish are perhaps the best of any, as their flesh is more solid, more agreeable and healthy, less exposed to putrescency, and less viscid. These excellent qualities they possess when fresh; when salted, they have all the properties of salt-flesh, and consequently its disadvantages. With respect to *herrings*, it is certain, that of all the sea-fish they are most easily digested: and salt-herrings, in particular, if eaten in small quantities, dissolve the slime in the stomach, stimulate the appetite, create thirst, and do not readily putrify by long keeping;

Among the *amphibious animals*, the legs of frogs are in some countries esteemed a delicate dish; yet, as they contain a large portion of fat, the stomach cannot easily digest them, without the addition of much salt. The same observation applies to the Turtle, as well as the West-Indian Guana, a species of Lizard, two or three feet long, of a most forbidding ap-

pearance; but its flesh is delicate and salubrious, much resembling that of a chicken.— We also eat lobsters and crabs, which are species of water-insects: as both of them, however, generally arrive at a stage approaching to putrefaction, before they are sold in inland towns, their consumption is attended with considerable danger. Besides, the flesh of lobsters, in particular, is not easily digested, as it possesses a peculiar acrimony, which in swallowing sometimes occasions pain in the throat. Some people, it is said, have been affected with eruptions of the skin, pain in the stomach, and rheumatisms, arising from the use of lobsters. Their jelly, however, is mild and nourishing.\*

\* The flesh of *river lobsters* is more delicate than that of the *sea-lobster*; but it is at the same time more subject to putrefaction, and ought therefore to be used in a fresh state, with much salt or vinegar. In Germany and other parts of the Continent, lake and river-lobsters are always boiled alive, and generally in milk: a dish much esteemed in families, and of which children are particularly fond.—The Germans cook various species of fresh-water-fish in milk: and although palatable dishes may thus be prepared, yet, on account of the incongruous variety of substances, I cannot approve of the mixture. There is, however, a method of obtaining from lobsters a very excellent and wholesome jelly, the particulars of which I shall here communicate to the reader, upon the authority of a respectable physician at Hamburg. “Take the flesh of about thirty river-lobsters sufficiently boiled; cut it in small pieces, and place it in a capacious earthen vessel, over a gentle fire, with one ounce of fresh butter. After the butter is completely absorbed, add the clean flesh and skin of two calves’ feet, and four quarts of pure soft water. These ingredients must be simmered over a moderate fire, till the whole of the mass amount to rather more than one quart. In that state, half a drachm of powdered nutmeg, and a handful of chervil, must be added; and after having allowed it to boil up again, the purest part of this mass is to be pressed through a strong linen cloth. When placed, for some hours, in a cellar or some other cool place, it forms a strong jelly, two or three spoonfuls of which will impart uncommon richness and flavour to a basinful of common veal or chicken broth.”—I make no doubt that a similar jelly may be prepared of small sea-lobsters, if they can be had alive.

Oysters are eaten both raw, and dressed: when raw, they are in every respect preferable; for, by cooking, they are deprived of the salt-water which promotes their digestion in the human stomach, as well as of a great proportion of their nourishing jelly. Raw oysters are easily digested, and may be eaten, with great advantage, by the robust, as well as by the weak and consumptive; as this shell-fish possesses more nutritive animal jelly than almost any other. They farther are generally attended with a laxative effect, if eaten in any quantity: hence they afford an excellent supper to those liable to costiveness.

*Snails*, though seldom eaten in this country, are equally nourishing and wholesome. On account of their gelatinous nature, they have lately been much used against consumptions; and as these complaints are now very frequent in Britain, it were to be wished that such patients may give this remedy a fair trial, by boiling a dozen of the red garden-snails every evening in a quart of sweet milk or whey, for half an hour, then straining the liquor through a coarse cloth, and drinking it with sugar every morning gradually upon an empty stomach; and repeating these draughts for a month or two, if required. This red garden-snail (or the *Helix Pomatia*, L.) has also been used externally in the open hemorrhoids, where fresh snails were applied, every two or three hours, in a raw state, with remarkable success.

Muscles are of a more solid texture, and therefore not so easily digested as oysters. The sea-muscles afford a hard, indigestible,

and, as some imagine, poisonous food. Although the examples of their deleterious nature be very rare, yet they ought not to be eaten without vinegar, or some other vegetable acid, acting as a corrector of their bad qualities, or, in the opinion of others, as an antidote.

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### *Of Vegetable Aliment.*

The various articles of nourishment we derive from the Vegetable Kingdom, may with propriety be divided into five orders :

1st, The different species of farina, or grain, such as wheat, rye, barley, and oats.

2d, The legumes, or pulse, such as peas, beans, &c.

3d, The various kinds of salads and pot-herbs.

4th, All the different roots ; and,

5th, Fruit, or the production of trees and shrubs.

The first of these, namely the farinaceous, are very nourishing, on account of the copious mucilage they contain ; but they are likewise difficult to digest. Bread itself, though justly called *the staff of life*, if eaten too freely, or to serve as a meal, produces viscosity or slime, obstructs the intestines, and lays the foundation of habitual costiveness. All dishes prepared of flour, are not only nourishing, but are emollient, attenuating, and correct acrimony. Leavened bread, or such as has acquired an acidulated taste by a slow fermentation of the dough, is cooling and antiseptic ; a circum-

stance well established by experience. By this process of preparing the dough, all the tough parts are most intimately mixed with the drier parts of the flour, and the fixed air is expelled in baking. New-baked bread always contains much of an indigestible paste, which is remedied, either by allowing it to dry for two or three days, or by toasting it. This ought to be done regularly, particularly in times of scarcity, both on account of health and economy. Stale bread, in every respect, deserves the preference: and persons troubled with flatulency, cramp of the stomach, and indigestion, should not upon any account eat new bread, and still less hot rolls and butter. Indeed, all pastry whatever is unwholesome, especially when hot. Those who devour hot pies with avidity, should consider, that they contain an uncommon quantity of air, which distends the stomach, and produces the most alarming and dangerous cholics, and incurable obstructions, insomuch that the stomach and bowels have been known to burst. The porous quality of bread arises from the fixed air having been expelled in baking; and the more spongy the bread, it is the more wholesome. But new-baked bread, and rolls in particular, require a sound stomach; because they contain much mucilage, not having parted with all their moisture; and wheat-flour is more viscid than that of rye, which is the bread-corn of most nations on the Continent.

Bread and butter, together with cheese, as they are eaten in Holland and Germany, form a mass scarcely digestible. The external sur-

face of bread, or the crust, which has been more dried by the heat of the oven, is easiest digested; it contains the empyreumatic part, expelled by fire from the flour; it produces an emollient effect on the bowels; but, at the same time, is more heating and less nourishing than the softer part, or crumb.

The great difference in bread is owing, partly to the different species of grain from which it is made, partly to the time the flour has been kept; for, when new, it is more difficult to deprive it of its tenacity; partly to its being more or less cleaned from the bran; partly to the different methods of fermenting and baking it; to the difference in the water with which the flour has been kneaded; and lastly, to the various ingredients of which the paste has been compounded. The softness of the mill-stones used in grinding the flour, may also vitiate the bread, by introducing particles of sand and marble, so as to make it equally noxious to the teeth, and oppressive to the stomach. Well-baked, and thoroughly dried bread, is easily dissolved by water, without rendering it viscid or gelatinous: hence it is well adapted for the use of the debilitated, as well as for every age or temperament.

Hasty-pudding, on account of its tenacity, and the quantity of mucilage it contains, is not so easily digested as people, who feed their infants upon this dish, are apt to imagine. Porridge made of oatmeal, the common food of children and the lower class of adults in Scotland, is not so heavy as that of wheat flour; though both of them require vigorous diges-

tive organs, robust constitutions, and strong exercise, in order to produce a proper nutriment.

The *vermicelli*, and *macarone* of the Italians, as well as all the different dishes made of flour mixed up into paste, and either boiled in water or stewed in butter, are ill calculated for patients and convalescents, to whom they are frequently administered. A paste, when it is so elastic that it can be formed into balls, is extremely difficult to be digested. All unfermented pastry is excessively trying to the stomach; and instead of wondering that the lovers of such dainties are continually troubled with indigestion and other stomachic complaints, it would be against the order of things if it were otherwise.

Bread ought not to be eaten with every dish; it is more useful and necessary with those articles that contain much nourishment in a small bulk, in order to give the stomach a proper degree of expansion. Besides, the addition of bread to animal food has another advantage, namely, that of preventing the disgust attending a too copious use of flesh, and its strong tendency to putrefaction. But if we accustom ourselves to eat new baked bread, to provisions already indigestible in themselves, such as fat geese, bacon, blood-sausages, and the like, we make them still more insupportable to our digestive organs. Of the different kinds of grain, from which bread is prepared, that of rye is by far the most wholesome for people of a sedentary life, as well as the delicate and nervous. For though it be

less nourishing, it is likewise less tenacious, and more easily digested, than bread made of wheat.\*

*Rice* contains a thin, unelastic, and easily soluble mucilage. It is one of the popular prejudices, that rice has a tendency to produce costiveness: this is only so far true as the use of it, by persons of languid and debilitated constitutions, is sometimes attended with flatulency, which sufficiently accounts for its secondary effect. To avoid such unpleasant consequences, rice ought to be eaten with the addition of some spice, such as cinnamon, fennel, carraway, annis-seed, and the like; particularly by those of a phlegmatic habit, and slow digestion.—In India, where this plentiful grain is almost the only food of the natives, it is regularly eaten with such quantities of pepper, and other strong spices, that Europeans, on their first arrival, cannot partake of this high-seasoned dish. From a custom so beneficial in its physical effects, we may conclude, that the Indians, though directed more by instinct than scientific induction, are not altogether unacquainted with the rules of diet.

\* A few years since, when serious apprehensions of an approaching famine were entertained, in consequence of the scarcity, or rather the high price of flour in this country, the minds of men were sedulously employed in researches tending to avert the impending calamity. Compositions of various substances to serve as substitutes for bread, such as grey-peas, horse-beans, potatoes, and many other farinaceous vegetables, were repeatedly tried. And although a very nourishing and palatable bread was formed of flour mixed with rice and potatoes, yet the prejudices of the lower, as well as the higher classes of the people, in favour of wheaten bread, were too great and inveterate, to admit so useful and beneficial an innovation.

One of the best preparations of rice is the mucilage, or jelly, which is obtained by boiling two ounces of it ground to fine powder, and a quarter of a pound of loaf-sugar in one pint of water, until it becomes a transparent thick broth: this, when expressed through a cloth, and allowed to cool, is a palatable and wholesome jelly.

*Oats*, when hulled or deprived of the husk, and reduced to groats, are used as the common dish for the infirm and sick in England, France, and Germany. They impart to the water a thick mucilage, which, with the addition of a few currants boiled in it, is of a nourishing and slightly aperient quality.

*Barley*, or rather pearl-barley, may be used with a similar intention, and is perhaps still more nutritive; but, after decoction, the grosser parts which remain ought not to be eaten.

*Millet*, or hirse, is inferior to either oats or barley; it possesses too crude a mucilage for relaxed or inactive stomachs.

*Manna-grass* (the *festuca fluitans*) is so called in Germany and Poland, because its seeds have a remarkably sweet and agreeable taste, particularly before the plant comes to its full growth. It excels in richness and nutriment all the other vegetable productions of Europe; and, boiled in milk, it affords excellent soups as well as puddings. Two ounces of this manna, properly cooked in milk and water, would be a sufficient meal for the most robust and laborious man. Boiled in water alone, in the proportion of one ounce to three pints of water evaporated to one quart, with the

addition of some sugar and white wine, it makes an agreeable and nourishing dish for lying-in women, and other patients for whom animal food is improper, and whose situation requires the occasional stimulus of wine.

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The *second* order of vegetable aliment includes all the leguminous productions, as beans, peas, lentils, and the like; these contain a solid gluten or mucilage, and afford a rich and strong nutriment, which best agrees with a vigorous stomach. They also have a considerable proportion of crude particles, which cannot be assimilated to our fluids, and must therefore remain undigested in the bowels, to the great detriment of the alimentary canal. The *meal* of the leguminous class is digested with more difficulty than that of grain; besides, it contains much fixed air; on which account it is extremely flatulent, is apt to produce costiveness, and to communicate various kinds of acrimony to the blood. These effects, however, it produces only when it is eaten too frequently and copiously. Hence bread, made of peas or beans, either alone or mixed and ground together with wheat, is improper for daily use.

Yet we must not imagine, that even the most wholesome articles of food are altogether free from air: this element is a necessary and useful ingredient, to promote the digestion of alimentary substances. The proportion of fixed air varies extremely in different vegetables:—all the leguminous plants particularly

abound with it; and even persons with whom they agree well, must have experienced flatulency and torpor, after a copious use of peas or beans. Those who are fond of peas-soup, would better consult their health, by boiling the peas whole, than split and deprived of their husks; for these promote the grinding of the peas, and prevent them from turning acid in the stomach, which split peas readily do, while they are apt to occasion oppression in the bowels, and a very troublesome heart-burn.

*Green peas*, as well as *French beans*, boiled in their fresh state, are equally agreeable and wholesome; for they are less flatulent, and more easy of digestion, than in their ripe state. It deserves to be remarked, in general, that all vegetables of the pulse kind, as they advance in growth, become more oppressive to the stomach, and consequently less salutary in their effects.

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The *third* order of Vegetables comprises the various kinds of salads and herbs used in cooking, such as greens, cabbage, spinage, and the like. These contain a great proportion of water, and little nourishment: they serve to fill the stomach, resist putrefaction, and may therefore be eaten more freely in summer than in winter; being, besides, of a softening, laxative, saponaceous, and consequently solvent nature, they are well calculated to relieve the bowels. On account of their watery consistence, they are of peculiar service to lean people, to those who lose much

moisture by perspiration, or who are troubled with flushings and undulations of the blood (in which case animal food is improper)—and as these vegetables assist insensible perspiration, they are cooling, and assist all the emunctories of the body. Their nourishment is in proportion to the mucilage contained in them; but as this is in a very diluted state, the aliment they afford is inconsiderable. They are further distinguished by the earthly, acrid, and aërial particles which they contain, both with respect to their nutriment, and their effects upon the first passages. They become soft by boiling, many of the aërial particles are expelled, and they are thus rendered more digestible. But the practice of boiling them in large quantities of water, which is afterwards poured off, is extremely absurd and injudicious; for, with the water, their best and most nutritious parts are consequently thrown away: hence these vegetables ought to be thoroughly washed, and, cabbage excepted, stewed in a small quantity of water, which will so far be reduced by slow boiling, that it may be brought to the table, together with the vegetables. To improve their relish, as well as to render these vegetables less flatulent, we generally add spices, which also assist digestion. And for the same reason, in a raw state, they are eaten with vinegar, salt, pepper, and the like.

*Salads*, being in general eaten with oil and vinegar, call for all the powers of the stomach, to digest these liquids, together with the raw herbs. *Baked* vegetables with paste and milk,

as they are prepared in some countries, lose all their principal virtues, and readily acquire an empyreumatic oil upon the crust, which is indigestible, and taints the fluids with a dangerous acrimony.

*Asparagus* is an excellent article of nutriment, although somewhat flatulent and diuretic in its effects. The young shoots of this plant are not only the most palatable, but at the same time the most salutary.—As a good substitute for sparrowgrass, I can from experience recommend the *young buds of hops*, which are more easily procured, scarcely inferior to the former in taste, and, on account of their aromatic quality, very grateful and wholesome.

*Artichokes* afford a light and tender food, perhaps still more nutritive but less diuretic than asparagus; for this reason, they are preferable for culinary uses.

*Spinage*, a favourite dish with many, affords no nutriment, passes quickly through the stomach and bowels, almost undigested; and, being usually dressed with butter, it weakens the alimentary canal, produces looseness, and consequently is not proper food for the weak and debilitated:—In languid stomachs, spinage is apt to produce acidity and the heart-burn.

*Sorrel* possesses an acrid acidity, which deprives the teeth of their enamel, and ought to be avoided by those who are already troubled with an acid taste in the mouth.

*Red Cabbage* is one of the most indigestible vegetables, particularly as the French and Germans eat it, with ham and chesnuts; it is thus rendered heating, flatulent, and laxative,

and contains no nourishment.—More digestible, cooling, and less hurtful to the bowels, are the young sprigs of cauliflower; but the most indigestible of all is the Colewort (*Caulis rapicius.*) What has been said with respect to cabbage, is applicable also to the Orach, or *Atriplex*, and the Lettuce, when eaten boiled or stewed.

*White Cabbage* is possessed of excellent properties; it is less flatulent than the common greens, and, being full of water, it is diuretic, and somewhat laxative.—It is remarkable, that all herbs and plants, in general, are more or less flatulent, according to their digestibility, and are disposed to putrescency, in proportion to the time they remain in the alimentary canal.

Of *White Cabbage* sliced or cut in thin shreds, and afterwards seasoned and salted, the Germans make *Sauer Kraut*; which is easily digested, on account of the salt mixed with it, and the acetous fermentation it has undergone, before it is used, and by which the greatest part of its fixed air is expelled. *Sauer Kraut* may be preserved fresh for a long time; it operates powerfully on the first passages, being one of the most excellent antiseptics; it has proved of singular service at sea, in resisting the ravages of the scurvy, and curing it in the most alarming stages. We are indebted to Capt. Cook, for introducing this salutary dish among the sailors, in spite of all prejudices, and thus preserving the health of many brave mariners. Lastly, *Sauer Kraut* has been found the best preventive

against epidemic distempers, particularly against the dysentery, and the putrid and pe- techial fevers, which it has even frequently cured.

*Lettuce* contains many nitrous particles, is very cooling, and useful in the evening to those who cannot sleep, from the too great heat and undulations of the blood. But the copious addition of oil and the yolk of eggs renders it less digestible than when eaten in its simple state; but if these must be used it is better to add some sugar, which decomposes these substances. The most suitable ingredients of Salads, besides the *Lettuce*, are the various *Cresses*, *Chervil*, (*Chaerophyllum bulbosum*, Linn.) and the scurvy-grass, which, together with other cooling herbs, produce the effect of cleansing the humours, or, as some say, of purifying the blood, and are at the same time diuretic; especially if eaten in Spring, and upon an empty stomach.

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The *fourth* order of Vegetables consists of all the esculent roots, or such as are used at our tables. They are either of the mild, or of the astringent and acrid kind. The former are much more nourishing and less flatulent than the latter, which however possess some medicinal powers, such as the various species of radishes, onions, garlic, and the like.

Roots are neither so nourishing, nor so easily digested as animal food. Yet we may consider it as a certain rule, that any kind of ali-

ment, for which we feel a natural and permanent appetite, is conformable to our nature. Of this kind is that beneficial root, the potato, which, in the most simple preparation, and without any addition, affords an agreeable and wholesome food to almost every person, and particularly to children. It is one of the lightest alimentary substances, occasioning neither viscosity nor flatulence, and can be hurtful only, when immoderately used. But, being a dry vegetable, and containing many earthy particles, it requires a proper quantity of drink to prevent obstructions. Its excellent nourishment is sufficiently obvious in the healthiness of those country people, whose principal food is potatoes, as well as animals that are fattened upon these roots.

The quickness with which the chyle made from potatoes is assimilated to the blood, leaves no doubt that they are easily digested; for it is a general remark, that labouring people sooner feel a renewal of their appetite, after potatoes, than any other species of food. It is a groundless assertion, that they generate a thick and crude chyle, and consequently a gross and viscous blood. It is an equally unfounded supposition, which is amply refuted by experience, that the potato is a narcotic root, and that it is apt to stupify the powers of the mind. This effect is produced only from a too copious use of it, together with want of exercise; in which cases any other food would be attended with similar consequences.

The stimulating powers ascribed to potatoes appear to me merely fanciful. Those of a farinaceous consistence are much more easily digested, than the heavy and gelatinous kind. The flour made of potatoes is more wholesome for pastry, and for all those dishes prepared of meal, than any other. The French have lately contrived a method of preparing a granulated flour from this root, which is grateful to the palate, and very nourishing. It is performed by a machine of simple construction, a representation of which, together with a description, was given, some time ago, in the *Repertory of the Arts and Manufactures*;—and it has also been used successfully, when mixed with wheat flour, in making bread.\*

The *Beet-root* contains a large proportion of saccharine matter. By the latest experiments of M. Achard, of Berlin, it has been proved, that about fourteen pounds weight produced one pound of raw sugar, exceedingly sweet, and without the intermixture of any other taste. Independent of this consideration, the beet is a valuable root, both in an economical and culinary respect; it is possessed of mild aperient qualities, and ought to be eaten more frequently, for supper, by those who are of a costive habit. Although it is not difficult of digestion, yet some less flatulent root, such as parsley, celery, or even potatoes, ought to be used together with the beet; which addition

\* Whatever has been formerly said against the use of potatoes, it is now well understood that they are wholesome, nourishing, and light to the stomach, even in the weakest constitutions.—M. *Parmentier*, of Paris, lived for several weeks on potatoes only, without experiencing any ill effects on his health.

will render it not only more palatable, but also more suitable to the stomach and bowels.

*Carrots* are extremely flatulent, and therefore an improper food for the weak, and those inclined to acidity; by such individuals they can scarcely be digested, unless taken with the addition of spice, and a proper quantity of salt; by which means their fermentation and corruption in the stomach will be in a great measure prevented. In other respects, they contain a good and copious alimentary fluid, at the same time powerfully affect the kidneys, and are likewise anthelmintic, or destructive of worms.

*Parsnips*, besides their sweet mucilage, contain somewhat of the aromatic principle, being more nourishing and less flatulent than carrots. To deprive them entirely of the latter quality, they ought to be boiled in two different waters; but by this precaution they partly lose their sweet taste, and become less nourishing.

*Turnips* are nutritive, but flatulent, and not easy of digestion; they become still more indigestible with age.—The least flatulent and most nourishing of these roots are the long kind, or Swedish Turnip, lately introduced into this country.

*Parsley*, as well as *Smallage*, are of a sweet, stimulating, and aromatic nature. The former, especially, was by the older physicians supposed to purify the blood; an effect which modern medical observers would not only doubt, but even ridicule. So much, however, is certain, that parsley is a mild aperient

and diuretic. Yet, for these salutary purposes, it ought not to be eaten in a raw but boiled state.

*Celery* is one of the most fragrant roots we possess in our climate, though its shoots and leaves are more commonly used for salads, than the root itself. There are two species of celery known among gardeners, both of which are estimable: one produces thick knobby roots, not unlike the size and figure of a short pine-apple; the other has a variety of small white, tender, and odorous roots. The latter species is more common in this country, while the former is much esteemed in France and Germany, where it is eaten in thin slices, previously soaked in vinegar; a preparation which, in summer, affords a cooling and wholesome dish. In a raw state, celery is digested with some difficulty, which may be removed by boiling it in water, or soaking it, as before observed, for a short time in vinegar.—The Germans prepare an artificial coffee from this root, by cutting it into small square pieces, which are dried and roasted in the usual manner. Dr. UNZER occasionally recommends this native coffee to his patients, particularly to nurses and lying-in-women, as a wholesome substitute for either tea, or the real coffee of the shops.

The *Skirret-root*, and the *Scorzenera* of Spain, possess more spicy and stimulating than nutritive qualities. Both these roots, as well as the three preceding, are diuretic, and consequently in a slight degree stimulating. The *Skirret*, in particular, has an agreeably sweet

and spicy flavor, and is so tender, that it can scarcely bear to be boiled. For this reason, it is most properly eaten when raw, like fruit, or may be used as an excellent ingredient in soups and broths.—The Scorzenera, on the contrary, ought to be deprived of its black skin, and only eaten boiled: by soaking the raw root for half an hour in cold water, it loses its bitter taste, and is likewise rendered less flatulent.

The *Salsafy*, or Goat's-beard, is a root containing still more of the saccharine principle, than the scorzenera: being a good substitute for sparrowgrass, and more easily reared in this climate, it certainly deserves to be more generally cultivated in our gardens.

*Onions*, *Garlic*, *Shallot*, and *Chives*, are stimulants: they assist digestion, relieve the bowels, expel flatulency, dissolve slime or mucus, and are therefore beneficial in diseases which proceed from too much viscosity; besides, they increase the appetite, and ought to be used principally as spices, or medicines. They are powerful expectorants, but must be avoided by very hot, irritable, and choleric temperaments. Although these roots are eaten in quantities by whole nations, yet from their penetrating and volatile smell, which they communicate to the human breath, it is certain they agree best with individuals of a cold and phlegmatic habit, and those whose stomachs require so powerful a stimulus.

All kinds of *Radishes* may be considered as medicinal roots; they are peculiarly calculat-

ed to dissolve slimy humours, to generate, and also to expel flatulency; moving the air inclosed in the intestines, and expelling it; by the copious air contained in themselves. They are salubrious to strong and active stomachs; but in those which are deficient in elasticity, radishes increase flatulency to the highest and most troublesome degree. The small salad-radishes are more readily digested than the large root; they propel all the alimentary fluids towards the stomach, increase the appetite, and are therefore proper to be eaten before a meal. Old radishes are altogether indigestible, and the whole genus, like onions and garlic, occasion a very offensive breath.

The *Arrow-root powder*, lately imported into this country from the East Indies, appears to afford a larger proportion of nutritive mucilage than any vegetable hitherto discovered: but it is to be regretted that the exorbitant retail-price (eight shillings the pound weight) will preclude many invalids and convalescents from using this excellent root in broths and jellies.

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The *fifth* and last order of Vegetable substances comprehends the *Fruit*, or productions, of the different trees and shrubs.

Fruit, in general, possesses strongly resolvent powers, and it is the more beneficial, as it comes to maturity at a time when the body is relaxed by the heat of summer, and when the blood has a strong tendency to inflamma-

tion. It is besides of great service in attenuating the thick bilious impurities collected during the summer, and of evacuating them by its laxative virtues. The acid contained in most kinds is as useful to quench thirst, as to resist putrefaction. In weak stomachs, however, or such as are filled with impurities and slime, it is apt to ferment, and occasion some inconvenience; but this may be avoided by a temperate use, and especially by eating it boiled.

The more sap or juice we meet with in fruit, it will prove the more flatulent; and as the juicy, cooling, and watery species of fruit require strong digestive organs, to prevent them from producing fermentation, flatulency, and diarrhœa, a glass of old wine is very proper to promote their digestion. A gentle diarrhœa, brought on by eating ripe fruit, in summer, has frequently a salutary effect.—Acrid and astringent fruit, being rather a medicine than food, is less hurtful to the healthy, and to children, than is commonly imagined. Instead of being noxious, as some imagine, in inflammatory disorders, it is of the greatest service. Persons of a thick and black blood cannot eat any thing more conducive to health than fruit, as it possesses the property of attenuating and putting such blood in motion; but those of a watery and phlegmatic constitution ought carefully to avoid it.

Fruit preserved with sugar is antiseptic and nourishing, but at the same time flatulent; and if preserved with sugar and spices, it is heating and drying. It is most wholesome when eat-

en on an empty stomach, which can exert all its power to dispel the air disengaged from it, and to remove it, before it begins to ferment. Boiling, as well as drying, corrects the flatulent tendency of fresh fruit, so that, thus prepared, it will agree with every body. By either of these methods it is deprived of its superfluous humidity, as well as of its fixed air; whence it becomes more nourishing, but less cooling, than in the fresh state.

*Sago* is the medullary part, or marrow, collected from a species of palm-tree growing in the Mulucca and other islands of the East-Indies. This substance, although not strictly the fruit of a tree, well deserves the first place here; for it is used as bread by the natives of India, who macerate it in water, and form it into cakes. The grains of sago, sold in the shops, are obtained by a more artificial process: they furnish a nourishing and agreeable jelly with water, milk, or broth; but require to be previously cleaned of the dust, mould, and seawater. To make a complete solution of sago, the first decoction ought to be strained, and afterwards boiled a second time, for about half an hour. Prepared in this manner, it is a proper dish for the consumptive and convalescent, as well as those whose digestion is weak or impaired.

*Cherries* produce the effects now stated, in a very pre-eminant degree; they are excellent in scurvy, in putrid fevers, and in dysentery; they correct the blood when inclined to putrescency, and by their saponaceous and melliferous juice, they powerfully resolve obstruc-

tions in the intestines. Those who use them with this intention, may eat them at any time of the day, though they operate most effectually in the morning, on an empty stomach. Even the sweet species contain a stimulating acid, which, in proportion to their juicy consistence, disagrees more or less with the weak and debilitated; for this sap or juice easily ferments in the stomach, and produces flatulency, diarrhoea, and acidity. On account of these peculiar effects, persons whose stomachs are bilious and vitiated, who are troubled with putrid eructations, and an offensive breath, ought to eat them freely, to counteract that disposition to putridity.

Cherries are divided into the aqueous-sweet, aqueous-acid, and the dry pulpous kinds. The Spanish cherries are the most difficult to digest, but are also the most nourishing. The aqueous-sweet kind, as our early common cherries, are unwholesome; because their juice easily ferments, and occasions colic and diarrhoea. The watery-acid sort are the best of any; their juice strengthens the stomach, purifies the blood, and is the least flatulent. Dried cherries are in many diseases an excellent article of diet, on account of their cooling and antiseptic properties. The swallowing of cherry-stones, however, is highly pernicious, as these stones have sometimes been found to accumulate in the intestines, to form lumps cemented together by viscid phlegm, and thus to produce the most violent and fatal symptoms.

*Plums* also possess medicinal virtues ; they are nourishing and attenuating. Prunes, or dried plums, are of peculiar service to costive habits, affording an agreeable and nutritive dish ; but, as they are apt to produce flatulency, it would be adviseable to eat them either when the stomach is empty, or for supper, without mixing them with other aliment. Under this limitation, they are both aperient and cooling, and agree with almost every constitution ; but plums eaten fresh, and not quite ripe, especially in large quantities, are very apt to occasion looseness, colics, and other maladies of the stomach and intestines. The larger sort of plums are in general more dangerous, in this respect, than the small ones, as they (particularly the green and yellow kind) are seldom allowed to grow perfectly ripe.

*Tamarinds* are more frequently employed for medicinal purposes, than as an article of diet. The pulp of this fruit is one of the most grateful acids ; which, if taken in the quantity of from half an ounce to an ounce or more, proves gently purgative. By its acidity, it is well calculated to quench thirst and allay immoderate heat.

*Peaches* abound with juice, and though not very nourishing, they are not productive of diarrhœa. This salutary fruit was formerly decried as unwholesome ; but it is rather serviceable in obstructions and bilious disorders. Sugar, wine, and the like, diminish the good qualities of peaches ; and even when preserved in brandy, they are not so wholesome as when fresh ; since they become hard by all ar-

tificial preparations. The kernels likewise of peaches are a wholesome bitter, and are cleansing, on account of their astringent properties.

As there are various kinds of peaches, of an inferior quality, it will be useful to point out the distinguishing marks of that fruit, in a mature state. The best sort of peaches have a delicate thin skin, which is easily separated from the pulposus part. Those which are not naturally smooth ought to be covered with only a small quantity of down; for too much down or wool on the surface is a sign of their inferior quality. They are likewise not to be depended upon as being wholesome, if they are of a size either too small or preternaturally large. Their pulp ought to be delicate, yet solid, somewhat fibrous, and full of juice; it should not adhere to the stone or kernel, and readily melt in the mouth.

*Apricots* are more pulpy than peaches, but perhaps less nutritive: their juice readily ferments and turns acid in weak stomachs; yet, when ripe, and used with moderation, they are cooling and antiseptic, particularly for bilious and plethoric individuals.

Of *Pears*, some are extremely hard, astringent, and difficult of digestion; but the more juicy pears have a saponaceous, nourishing, and readily digestible fluid; in their effects they resemble the sweet kind of apples, except that they are less relaxing to the bowels. Pears are of a more flatulent tendency than any of the fruits before mentioned, and especially the hard winter pears, which are eaten

at a time when the stomach requires stimulating more than cooling food.

*Apples* are, in their general effect, similar to other fruit, and, besides their aromatic virtues, are possessed of laxative properties. They are serviceable in diseases of the breast, to remove spasmodic contractions, to neutralize acrimony, and to attenuate viscid phlegm. With this intention, apples are most beneficial when eaten either roasted or boiled. The common people in Germany are so sensible of their excellent properties, in inflammatory diseases, that they boil even the wild apples, and drink the water. This process deserves imitation, especially when apples become scarce in Spring.

Apples may be divided into the spicy, the acidulated, and the watery species. The first, the various kinds of rennet, for example, have the most delicate flavor, and are certainly the best; they do not contain a superfluity of water, and, from their vinous nature, are not apt to excite flatulency. Other kinds of apples, like the pippins, are too hard, consequently heavy to the stomach, though somewhat more nourishing than the former. Stewed apples are easily digested and wholesome.

The kernels or seeds of apples are bitter and aromatic; Nature seems to have intended the seeds for correcting the watery and fermentable fluids of this and all other fruit, apricots excepted. Hence the kernels of apples and pears, as well as those of plums and cherries, ought to be eaten with the fruit, and not be thrown away as useless.—The but-

ter in the paste of apple-pies may be considered as an useful addition, on account of its tendency to prevent fermentation, though the pastry itself always disagrees with weak and irritable stomachs.

Of *Quinces* we have two species, namely, the apple and pear-quince: the latter are the most wholesome, particularly those of Portugal. They are an excellent antiseptic, and in this respect the best kind of fruit, containing an acid and much mucilage. They are not productive of obstructions; but their pulp, like that of all other fruit, is digested with some difficulty. They are generally eaten boiled with sugar, and are excellent in dysentery, on account of their copious mucilage.

In *Lemons, Oranges*, and other fruit of that kind, we meet with three different substances. The external rind contains an essential oil, strongly astringent and heating; the second or white rind is without taste; the third part of them is a salubrious, cooling, and acid pulp, highly efficacious in counteracting the putrid tendency and dissolution of the blood. The juice of lemons and limes is one of the strongest vegetable acids;\* and that of oran-

\* If the objections started against the use of these acids, by a late physician in Germany, Dr. UNZER, be well founded, we ought to guard against their use. He maintains that, although lemons and limes may be wholesome and refreshing fruits in their native country, yet as they are packed up and sent to us in an unripe state, they possess an acrid and unnatural acid, from not having undergone the vinous and acetous fermentations, and which consequently cannot be wholesome. The juice, especially, which is obtained from the middle of those fruits, having acquired an highly astringent though not unpleasant taste, from the

ges and shaddocks, though milder, is not less salutary.

These acids are of a very saponaceous consistence; they attenuate the fluids, remove obstructions, encourage digestion, stimulate the appetite, quench thirst, cool the blood, counteract putrefaction, are a principal remedy in pectoral, bilious, and inflammatory diseases, as likewise in scurvy, in all affections of the kidneys, and an antidote against the narcotic vegetable poisons. Hence the largest dose of opium may be checked in its narcotic effects, if a proper quantity of the acid of lemons be taken with, or immediately after it. Four grains of pure opium, for instance, or one hundred drops of laudanum, is a very powerful and sometimes fatal dose; yet if one ounce of the pure acid of lemons, or two ounces of orange juice, be added to every grain of opium, or to twenty-five drops of laudanum, it will produce a very different effect. Instead of stupifying the person who takes it, and of being attended with painful costiveness, it will not only prove laxative, but induce first a cheerfulness, not attainable by the use either of opium or strong liquors, and afterwards bring on a gentle and refreshing sleep.

Styptic quality of the bitter kernels, is extremely unwholesome. It is, according to the observations of Dr. Unzer, very apt to impair digestion, and to occasion either diarrhoea or constipation of the bowels.—Such effects, however, will be produced only when these acids are *immoderately* used; in which case the most wholesome substances will be attended with bad consequences, and ever form exceptions from the general rule. Yet I must agree with Dr. U. that the peel of lemons and oranges contains an inflammable and heating oil, which, if rubbed on sugar, for making punch, lemonade, &c. is apt to produce dangerous effects.

Of these effects I can speak from my own experience, as well as that of others. Opium, used with this addition, is one of the most salutary and beneficial substances with which we are acquainted. I am farther inclined to believe, that the Turks, who eat very little animal food, could not bear the large quantities of opium they swallow, were it not for the copious use of vegetable acids. And that these form a principal part of a Turkish summer diet, every traveller knows, who has visited the eastern climates.

For these reasons, I cannot sufficiently recommend the use of acids to persons, who are either accustomed, or obliged, to take opiates in large doses. In choleric, bilious, and plethoric habits, in those liable to obstructions, whose alimentary canal is unclean, and lastly, in those who feel a determination of the blood to the head, opium is an uncertain, and even dangerous medicine, without the addition of vegetable acids. The want of the acid of lemons may be effectually supplied by an indigenous production:—barberries afford an acid fully as strong, and nearly as agreeable, as that of lemons.

The juice of the various species of *Raisins* is not unlike that of *ripe* lemons in its properties, but less efficacious. There are various kinds of that excellent fruit. Among the larger sort, those of a blueish colour, imported from *Marseilles*, are the best; while the Spanish raisins, of a light brown colour, are inferior to those of any other species. Both kinds, as well as *Currants*, contain much nutriment,

but cannot be recommended for frequent use, as they all tend to produce flatulency, particularly in individuals of relaxed habits and a sedentary life. On this account, they ought to be eaten with other food, in which case they are emollient, gently laxative, and sometimes anodyne.

*Gooseberries*, having less of the acid than either raisins or currants, are perhaps more wholesome, especially if their skin and other impurities are not swallowed together with the juice. When used in a green state, for sauces and pies, they are cooling and refreshing; and, when ripe, possess similar properties with cherries.

*Figs* abound with saccharine matter, and are uncommonly nutritive, though at the same time of a flatulent nature, unless eaten with bread or other mealy substances.—Of similar effects are mulberries and raspberries: the former have a more mucilaginous and nourishing juice, while that of the latter is more of a vinous nature, and one of the best cordials for allaying thirst and affording refreshment.

*Grapes* and *Strawberries* are both excellent fruits. They are uncommonly resolvent, laxative without debilitating, and promote all the natural evacuations; but at the same time, grapes are in a high degree flatulent.

The quality of grapes depends much on climate and soil. Those of a sweet taste, and aromatic flavour, only ought to be used. They agree best when eaten on an empty stomach, with a small quantity of bread. Besides their slightly nourishing quality, it is affirmed by

some writers, that they cool the blood and animate the nerves.

Strawberries, if eaten plentifully, have been found a safe preventive against the stone in the kidneys; as is attested by the experience of the celebrated LINNÆUS. Yet the small stones contained in strawberries, as well as in grapes, are said to accumulate in the intestines of some individuals, and to give rise to the most obstinate constipations, nay even to the iliac passion. The best method of eating strawberries is with pure water, and sweetened with a little sugar; they are more heating with wine, but less wholesome; with milk or cream they are an agreeable but improper composition. As a medicine, the wild strawberry is far preferable to any other.

*Cucumbers* are a wholesome, gently opening, and cooling fruit, which may be of considerable service to the consumptive, as it has the property of sweetening acrid humours. They show a tendency to ferment, and produce diarrhœa; but this may be prevented by the addition of vinegar and pepper, which also counteracts their natural coldness. Prepared with oil, vinegar, salt, and pepper, they are insupportable to some weak stomachs, and occasion frequent eructations and flatulency. But properly pickled, they are an excellent antiseptic, though unfit to be given to children and wet-nurses.

Much of the same nature with cucumbers are *Melons*; but they are more aromatic, and, in this respect, more wholesome. *Water-melons* require more spice and wine than *Musk-melons*;

as they partake more of the nature of Cucumbers.

*Gourds*, a fruit of the melon-kind, but less sweet, and of a much larger size, if boiled in milk, after the first water has been poured off, and with the addition of salt and pepper, affords sufficiently wholesome and nutritive food.

*Olives*, in their natural state, are bitter, acrid, and exceedingly disagreeable; though their taste is much improved when pickled, as we receive them from abroad, particularly in the smaller kind, or *Lucca olives*. On account of the abundance of oil which they contain, they are unfit for delicate stomachs, and are pernicious, especially when eaten for dessert, after a heavy dinner.

*Almonds, Walnuts, Hazlenuts, and Nuts* in general, are extremely difficult of digestion, on account of the oil they contain, which readily turns acrid and rancid on the stomach, and occasions the heart-burn. Bilious individuals should by no means eat them; and there is nothing so absurd as to administer *almond-milk* as a common diet-drink to febrile patients. This milk consists altogether of oily and almost insoluble parts, which heat and vitiate the stomach, stimulate the bile, and are easily decomposed from the water with which they are mixed. It quickly spoils; frequently, indeed, before it is introduced into the stomach: it is not in the least degree cooling, and its nourishing quality is very improperly employed in fevers, and all those diseases which are attended with debility of the alimentary canal.

Nuts and almonds ought to be eaten only while fresh, and when the skin, which is extremely astringent and hurtful, can be removed. They should be well chewed, and eaten with salt; for every piece swallowed entire is indigestible, and the salt renders them miscible with our fluids as a saponaceous mass. If eaten in large quantities, they remain in the stomach, cannot be expelled by any medicines, and produce alarming and sometimes fatal disorders. In general, they occasion difficult breathing, vomiting, and complaints in the bowels, which have been observed to be very common in those autumns that were productive of great quantities of nuts.

Last among the vegetable productions, we may class the various species of *Mushrooms*. They are all of a tough, leathery consistence; and being almost indigestible, they afford little nutriment, notwithstanding they, in a great measure, resemble animal food.

Several kinds of mushrooms are said to contain a narcotic and acrimonious poison. And as those of a harmless kind cannot be easily distinguished from the bad ones, this might be a sufficient reason to abstain from the use of them altogether. But if they must appear at our tables, vegetable acids, or vinegar, are the best antidotes, to counteract their pernicious effects. Pickled with vinegar, or salted, mushrooms become still more tough; and roasted with butter, they are an indigestible mass, and extremely liable to turn rancid in the stomach.

*Of Drink in particular.**I. With respect to its Quantity.*

*Drinking* is perhaps more necessary to the support of animal life than *Eating*; for drink is indispensable to the solution and digestion of food. Those who drink too little, people, for instance, of a sedentary life, and particularly women, are subject to complaints of indigestion. Sufficient drink prevents the incrustation of the blood, and the obstruction of the smaller vessels; it tends to clear the blood of the acrid particles generated in it; and it promotes the necessary secretions, such as the bile and the gastric juice of the stomach.

We ought to drink only when we are thirsty, and to desist when thirst is quenched: but this is seldom the case, because many of our liquors stimulate the palate. Pure water, therefore, is an inestimable beverage, as it will not induce us to drink more than is necessary. We should drink in a greater proportion than we eat; for the quantity of our fluids by far exceeds that of the solids, and consequently there must be secreted more fluids than solids. The general rule may be given, to take about double the proportion of liquid to the dry food; but this cannot be accurately observed, nor is it applicable in all cases.

The season, the weather, cold, heat, the nature of our food, and the greater or less degree of our exercise, require more or less drink at one time than at another. Thirst, however,

is as good, if not a better guide than hunger ; and he who is accustomed to drink water only, will not easily transgress the measure, if he drink as often as nature calls upon him. With a proper choice of food, every one would drink conformably to his wants. Hence it is needless to recommend water as a beverage to persons who will not be persuaded to change their irregular mode of eating.

The more we eat in quantity, and the drier our victuals are, the more we ought to drink. The phlegmatic have less inclination to drink than those of a sanguine and choleric temperament. The laborious ought to drink more than the sedentary, and still more in summer than in winter, to supply the humours lost by insensible perspiration.

In the morning when we rise, we generally feel an inclination for drink, which is relieved by tea, coffee, or other warm liquors. Water would unquestionably be a more proper beverage at this time ; and I venture to say, it would be disagreeable to those only, whose stomachs are spoiled by the habitual use of warm liquors and hot rolls. A glass of pure fresh water, and a while after it, a piece of bread with some fruit, or even butter, would afford a very wholesome breakfast, by which the stomach and the intestines might be cleared, the blood and humours refreshed, and the whole body strengthened. If the stomach be not loaded with mucus, or relaxed by tippling, a basin of sweet cow's milk, with a piece of stale bread, is an excellent breakfast in Spring and Summer.

To drink immediately before a meal, is improper, because the stomach is thereby swelled, and rendered less fit for the digestion of food. Hence, to avoid the necessity of drinking, it is advisable, not to take any violent exercise immediately before dinner. To drink much at night, previous to our going to bed, is likewise hurtful. But the drinking before a meal is more noxious than at any other time; because the stomach is filled with the liquid we swallow; the bile and the gastric juice there collected are too much diluted; and consequently the important office of digestion is checked.

To drink much during the time of taking food is also objectionable; as the stomach is thus rendered incapable of receiving the due portion of aliment. Cold beer or water does not well agree with warm victuals; and the teeth are injured by taking hot and cold substances in immediate succession. In the hot weather of Summer, it is scarcely possible to delay drinking till the dinner be finished; and it is the more necessary, or rather less hurtful, at this time, as the bile which serves to dissolve the victuals, then requires greater dilution. In Winter, unless we eat very dry and salted provisions, we feel less inclined to drink at table. But if we must drink in the intervals of eating, it would be most conducive to digestion to drink water only, and in small quantities: as pure water is more proper during the time of eating, because it agrees with all dishes without exception. Yet a glass or two of wine, during dinner, particularly for the aged

and debilitated, is proper and conducive to digestion.

Some advise us never to drink without eating something; but he who drinks only when nature requires it, has no occasion to eat every time he drinks. Persons, on the contrary, who are once accustomed to drink more than is necessary, or to make use of hot, stimulating, and intoxicating liquors, would do well to eat always some bread or other solid food along with them. Indeed we ought to begin to drink only after our appetite for food is satisfied, and then it should be done gradually during digestion. This function may be disturbed by large draughts of liquor, which occasion fermentation and flatulency.—Glass is the most proper substance for drinking-vessels; for no other but the fluoric acid will affect it.—For the sake of delicacy, as well as health, every person at table ought to be furnished with a separate glass or other vessel for his drink.

Much drink loads and oppresses the stomach, as it distends it too much; but it is not nearly so hurtful as too much food. Every beverage relaxes the stomach; and persons whose bowels are not sufficiently elastic, should be careful in the quantity they drink; for an immoderate proportion of it may weaken digestion, dilute the fluids too much, and conduct the food too quickly through the alimentary canal. An undue portion of drink renders the mass of the blood too thin and watery; from a thin blood arises also a weak alimentary fluid, consequently a general debility of the body, and relaxation of the urinary and other passages.

On the other hand, too little drink is equally improper; digestion is weakened; many parts of victuals remain undissolved, and are not conducted to the lacteals, because the proper means of diluting them are wanting; the blood becomes thick and viscid; and finally, the secretions and excretions are not duly performed, because the different canals are too dry and contracted.

## II. *With respect to its Quality.*

THERE is as great a diversity among the kinds of beverage, as there is among those of food: water itself is of very different qualities, according to the particles with which it is impregnated, and the places from which it is obtained. That of wells, springs, rivers, lakes, swamps, and the various mineral waters, all differ in their sensible properties. Even cold and warm water produce different effects. The former, when moderately used, strengthens the stomach, and proves debilitating only when it is drunk in too large quantities. Warm water is always relaxing, and still more so when taken in a large quantity; it remains longer in the stomach than cold water, and consequently is more oppressive: cold liquor stimulates the stomach, but warm drink diminishes its elasticity.

If the stomach be overfilled with drink, and its elasticity weakened, a glass of strong wine, or other spirituous liquor, may remedy this inconvenience.—Water can only so far be called nourishing, as it supplies the aqueous parts we continually lose. It is the basis of

all other liquids, and the greater proportion of water they contain, the more fit they are to promote digestion.

*Spring-water* originates partly from that of the sea, which has been changed into vapours by subterraneous heat, and partly from the atmosphere. As it is dissolved, purified, and filtered in a variety of ways, before it becomes visible to us, it is lighter and purer than other waters.

*Well-water* is more or less pure, according as it passes over beds of earth, which contain soluble, or minute particles. Wells opened in a sandy soil are the purest, because the water is there most completely filtered. The more frequently a well is used, the better its water, provided that no impure substances are introduced into it; for, the longer water stands unmoved, it turns the sooner putrid. Well-water, finally, may be most effectually purified by filtering it through a quantity of sand and small pebbles; and still more conveniently by means of filtering-stones.\*

*River-water* is more pure and wholesome, if it flows over a sandy and stony soil, than if it pass over muddy beds, or through towns, villages, and forests, from which it receives many impure substances: the water is rendered foul by fishes, amphibious animals, and plants. Lastly, the more rapid the course of the river, the easier it clears itself of feculent particles, and the water becomes purer.

\* The filtering machines lately invented by Mr. Joseph Collier, of London, promise to be very useful for domestic purposes, as they are applicable to all fluids, but more particularly water.

*Lake-water* much resembles that of rivers in its properties, but being less agitated, it is more impure, and better adapted to washing than cooking.

The water, which in cases of necessity is obtained from *swamps* or *ditches*, is the worst of all; because a great variety of impurities are collected in it, which in a stagnant water and a soft soil readily putrify. And, as the mere exhalations of such waters produce a pestilential atmosphere, it may be easily conceived, that the use of them must be attended with putrid and other dangerous diseases.

*Rain-water* is also impure, as it contains many saline and oily particles, soon putrifies, and principally consists of the joint exhalations of animals, vegetables, and minerals, of an immense number and variety of small insects and their eggs, seeds of plants, and the like.—*Rain-water* is particularly impure in places filled with many noxious vapours, such as marshy countries, and large manufacturing towns, where the fumes of metallic and other substances are mixed with rain. In high and elevated situations, at a distance from impure exhalations, if no strong winds blow, and after a gentle shower, rain-water is then purest; because the vapours of the atmosphere have already subsided. In Summer, however, on account of the copious exhalations, rain-water is most objectionable.

*Snow-water* possesses the same properties as rain-water, but it is purer: both are soft, that is, without so many mineral and earthy particles as spring, well, and river waters. Still

purier is *hail-water*, as being produced in the higher regions of the atmosphere, and having a form, in which it cannot easily partake of impurities. Lastly, *Dew*, as it arises from the evaporations of various bodies of the vegetable and animal kingdoms, is more or less impure, according to the different regions and seasons.

As the health of man principally depends on the purity and salubrity of the water he uses, we ought, where necessary, to deprive it of its pernicious qualities; and this can be done by boiling, filtering, and most effectually by distillation. The putrid substances in the water may be corrected by the addition of an acid. Thus, half an ounce of alum in powder, will make twelve gallons of corrupted water pure and transparent in two hours, without imparting a sensible degree of astringency. By the addition of a very small quantity of quick lime, water may be preserved from corruption in long voyages: or, to prevent water from putrescence at sea, add a small quantity of alkali and vitriolic acid to every cask, which will preserve it pure and wholesome for a twelvemonth. Charcoal-powder has also been found to be excellently adapted to check the putrid tendency of water, and for this reason the staves of the casks, used on shipboard, ought to be well burnt in the inside, to keep the water from corrupting. Vinegar, or other strong acids, are also well calculated to correct putrid water; and may be either mixed with it, or drunk immediately after, to prevent its bad effects.

*Wine*, that salutiferous liquor to the infirm and the aged, may be divided into *five* principal classes :

1st, The *sweet wines*, for instance, those of Hungary, Spain, Italy, Greece ; the Malaga, Malmsey, Madeira, and Cape wines. If these be genuine ; if they have not been adulterated by the addition of sugar or honey, &c. if they have been properly fermented, they afford a true medicine to the weak and convalescent.

2d, The *weakly acidulated wines* ; such as old Rhenish, Champaign, those of the Mosel. of the Neckar, Franconia, and Austria ; of these the Rhenish, Mosel, and Champaign wines are the best.

3d, The *acid and tart wines* ; among which are most of the wines of Franconia, Thuringia, Saxony, Silesia, and some parts of Brandenburg. These wines, in general, are apt to occasion head-achs, complaints of the stomach, and are besides of an unpleasant taste.

4th, The *acidulated sweet wines*, particularly those of France, as the common white wine and claret, are wholesome, provided that they be neither too old nor too new ; and

5th, The *sharp and astringent wines*, such as Port wine, Burgundy, the dry or hard kinds of Madeira, Sherry, and the like, which, on account of their heating and binding nature, ought to be used chiefly for medicinal purposes.

There are a great variety of fruit-wines, which are fermented like wines from the grape ; for instance, the currant and raisin-

wines: but the artificial wines of this country are, in general, liable to many strong objections. Among our home-made wines may be reckoned Cyder and Perry, which are properly wines of Apples and Pears. Cyder and Perry are, it is said, generally fermented and kept in leaden vessels, or at least the Apples and Pears are passed through leaden tubes; and the lead being readily dissolved by the acid, is gradually introduced into the body, which produces painful and dangerous colics, and frequently gives rise to the most desperate and incurable obstipations, among those habituated to the free use of these liquors.

With respect to the constituent parts of wine, I shall only remark, that every kind consists of three principal ingredients, *water*, *alcohol*, or a pure spirit, and *sugar*. If these three substances could be so intimately combined as they are in wines, and if afterwards the proper aromatics were added, to impart to them the particular flavour, there is no doubt, but we could perfectly imitate every wine whatever. But the greatest obstacle to this speculation is the length of time, which wines require to arrive at a proper state of maturity, and which, in made wines, ought to be still further prolonged.

The more water the wine contains, it is the more suitable beverage at table, and, when weak, it is in some degree calculated to quench thirst. The strong wines, on the contrary, excite thirst, as they are drying, and affect the organs of secretion. As every kind of wine contains a greater or less quantity of acid, it

is an excellent antiseptic remedy, and hence it is given copiously in putrid ulcers and malignant fevers. Moderately used, it increases the circulation of the fluids, and dilates the blood-vessels, promotes both the secretions and excretions, and invigorates all the functions of the body. Every motion is performed with greater vivacity, as is obvious from the additional lustre of the eyes. But the strength and vigour which wine imparts to the body, is of no longer duration, than while it remains in the stomach, before it enters into the mass of the blood, and while the stimulus received by the nerves of the stomach, is propagated to the brain. This explains the cause, that strong liquors are so intoxicating, when drunk upon an empty stomach.

That wine operates on and through the stomach, is clear from experience; for an emetic taken immediately after it, will soon make a drunken man sober. But if its spirituous parts be communicated to the blood, so as to occasion fluctuations, the body becomes disordered, weak, and relaxed. It is only a stimulant, and not a permanently strengthening cordial; for most wine-drinkers, who indulge in excess, die of relaxation and debility. There may, however, be cases in which an occasional excess of this kind will be salutary; for instance, to a person who has been long sitting at study, or whose mind is depressed, and whose fluids are nearly stagnating: as passions sometimes conduce to animate the mind, and tempests to purify the atmosphere.

The *state of intoxication* is in every respect similar to that of incipient apoplexy or palsy.—Drunken men stagger in various directions, their tongue loses its power of speech; they stammer, and see things double and moving circularly. The mind is equally affected, and imbecility is the concomitant effect. All these partial palsies arise from the pressure of the blood-vessels on the brain, which are then surcharged with blood. If the intoxication has arrived at its utmost height, there is no longer any difference between this and the true apoplexy; all the other organs are paralysed, except the heart, which continues its action, and breathing is not suppressed. The imprudent sufferer is deprived of sensation, and if one of the smaller blood-vessels, that press on the brain with an unusual weight, should accidentally burst, he is in danger of instant death. But still more frequently does one of the pulmonary vessels burst, and occasion spitting of blood.

In drinking, also much depends on the bodily constitution and other circumstances.—Thus, people are soonest intoxicated in a cold place, where perspiration is checked, and when the blood is moving from the external to the internal parts. The same is the case on an empty stomach, but this may be prevented by eating a little at intervals, especially fat or oily substances. Individuals of much sensibility and irritability, and persons after having taken violent exercise, are more liable to intoxication, than those of a calm and a phlegmatic temperament.

For these reasons, a person much inebriated ought to be carried without delay into a temperate room, and placed in a bed between the blankets, with his head raised, in order to promote the circulation of the blood, from the head and the internal organs towards the surface of the body and the lower extremities. All close bandages of the shirt and garters must be loosed, and the feet should be bathed in lukewarm water, not exceeding the ninety-eighth degree of Fahrenheit. Plenty of tea or other diluent drink ought to be given, and a gentle emetic is frequently of great service.

After a good sleep, which has overcome the intoxication, the whole body feels weak and tremulous; and the stomach disordered. In this state, persons are generally troubled with much acid in the digestive organ, which may be removed by the absorbent earths, such as magnesia; after which, some sedative and strengthening remedies may be given, such as hot red-wine negus, warm ale with ginger, strong coffee, and the like.

The copious use of wine, though not to a degree of inebriation, is exceedingly debilitating to the stomach, checking digestion, exciting diarrhœa, if white-wine, and obstructions, if port-wine be the favorite liquor; it makes the fibres dry and rigid; the cheeks and the whole surface of the body turn fallow, a symptom of bad digestion; the powers of the body and mind are enfeebled, and dropsy or gout, and sometimes sudden death, are the consequences. Plethoric young men, and such as have weak stomachs and lungs, should not ac-

custom themselves to the use of wine. To give it to infants or children, is a practice highly pernicious, except in very small quantities indeed. In short, wine should be used as a medicine only, if intended to produce salutary effects. To the phlegmatic, to the aged, and to those who are disposed to flatulency, and after fat meat, it is highly beneficial, if used with prudence and moderation.

As wine encourages perspiration, it dries the body, makes it lean, and may therefore be of service to cold and phlegmatic constitutions. It stimulates the bile, and excites the appetite to a repetition of excess, so that persons once habituated to drinking can but gradually relinquish this seductive practice. To drink wine copiously every day, is as improper and pernicious as to take medicines by way of diet: nothing is so much calculated to occasion habitual indigestion. And as wines are frequently adulterated with sugar of lead, and other poisonous ingredients, to render them more agreeable to the palate, I propose to bestow some attention on this important subject, in order to enable the reader to detect such pernicious mixtures, which may expose his health, and even life itself to the greatest danger.

Some of the adulterations of wine are rather harmless, others extremely dangerous. The common red-wines are frequently made of new, tart, and half-spoiled white wines, by tinging them with red fumach, or other woods and berries. In order to make wines stronger and more pungent, a variety of spices are employed, such as galangal, cardamom, mace, and

the like; or an unfermented must, wort, or the mash for distilling spirits, are occasionally added, and allowed to ferment together with impure wines. To impart to wine the flavor of muscadel, the leaves of the *Horminum*, a species of Sage (*Salvia Horminum*, L.) are often used; though it be a plant of a strong stupifying smell, and very pernicious effects.

All adulterated wines, and what we call British wines, if drunk in any quantity, are more or less detrimental to health. For, even by the most innocent mode of preparing them in large quantities, the manufacturers are induced to season them with spices of a heating and stimulating nature. But the most deleterious of all adulterations of wine, is that with the various preparations of lead, to give it a sweet taste. This infamous practice was carried on, some years ago, in Paris, to such an extent, that the Excise-office could not account for the prodigious increase of Vinegar entered at the city-gates. But it was at length discovered, that this vinegar consisted only of tart and adulterated wines, imported under the pretended character of vinegar, in order to avoid the high duty imposed upon wines, on their entrance into Paris: and sugar of lead, joined to some absorbent earths, was employed to change these vinegars into sweet wines, which destroyed the lives of many thousand persons. This secret of the utmost importance to health and life, was confessed by a rich old wine-merchant, on his death-bed, to relieve in some degree his tortured conscience.

Such adulterated wines operate like slow poisons; they first occasion head-ach, contraction of the throat, pain of the stomach, uneasiness, cough, difficulty of breathing; afterwards colics, and particularly the dry belly-ach, with continual obstipations, and at length palsy, convulsions, consumption, and death.—The brass cocks also, which are by some people used to draw of wine or cyder, are of the most dangerous tendency; as they easily yield and mix their verdigrise with the liquor.

To detect adulterated wines, we must attend to the following particulars: every white or straw-coloured wine of a sweetish taste, afterwards astringent, and at the same time new; every wine that has an unusually high colour, not in proportion to its strength and age, or if it has the flavour of brandy, penetrates the tongue, or lastly, if it has an uncommonly strong flavour, may be justly suspected of adulteration.—Red wines, either of a very deep or a very faint colour; of a woody or tart taste; and those which cover the inner surface of the glass, as well as the bottom of the bottles, with a red sediment, are generally tinged with some colouring substances. If such a wine be passed through filtering paper, the colouring particles will remain behind on the paper.

By the following method, we may easily discover, whether wines be adulterated, or coloured, with burnt sugar, raisins, whortle-berries, and the like. A small phial must be filled with the suspected wine; the opening is

stopped with the finger, and the phial, being inverted, is plunged into a tumbler of water: the finger being withdrawn from the mouth of the phial, if the wine be adulterated the substance with which this is done, will visibly escape from the phial, and mix with the water; in so far at least, as the addition is heavier than water, which is generally the case.

These adulterations, however, are of little detriment to health, if they contain no *metallic* particles. In order to discover these, we are possessed of an excellent chemical test, contrived by Prof. HAHNEMANN, in Germany, and known by the name of *Liquor vini probatorius*. It is prepared as follows: One drachm of the dry liver of sulphur, and two drachms of cream of tartar, are shaken in two ounces of distilled water, till it be completely saturated with hepatic air: the liquor is then filtered through blotting paper, and kept in a close stopped phial. From sixteen to twenty drops of this liquid are dropped into a small glass, filled with wine that is suspected to have been adulterated. If the wine turn only thick with white clouds, and deposit no other but a white sediment, we may be certain that it contains no metallic ingredients whatever; but if it turn black, or even dark, if its colour approach that of a dark red, if it have first a sweet, and then an astringent taste, it is certainly impregnated with sugar of lead, or some other preparation of that metal equally destructive. If, however, the dark colour be of a bluish cast, not unlike that of pale ink, we may suspect the wine to contain iron in its

composition. Lastly, if the wine be impregnated with copper or verdigrise, it will deposit a sediment of a blackish grey colour. This experiment ought to be made with a fresh-prepared test, and in the open air.

It further merits attention, that white wines are very frequently coloured with burnt sugar and other vegetable bodies; they acquire a darker colour by being kept in oak casks, or by containing much tartar; and in all these cases they will be made somewhat darker by the above described test; but the sediment will not be of an uniform colour, and will consist only of some brown streaks.—It is well known, that all white wines must be impregnated with a small quantity of sulphur, in order to preserve them: if this be done in moderation, it is not detrimental to health; but if too great a proportion of sulphur be used, such wine occasions great heat and thirst, it soon intoxicates, produces eruptions of the skin and face, head-ach, trembling of the limbs, and palpitation of the heart, hemorrhoidal complaints, gout, and a variety of nervous symptoms. Nothing is so easily discovered as sulphur; for by putting a piece of silver, or even the shell of an egg, into an over-sulpherated wine, it will instantly turn black.

Wines are sometimes adulterated by mixing quick-lime with them, in order to produce a beautiful ruby-colour. If such a wine be poured into a tumbler, and allowed to stand for a day or two, a thin crust or pellicle will be formed on the top, by which the lime held in solution will be detected. It is affirmed

that such wines, if used for any length of time, bring on gouty and gravelly complaints.

The most innocent adulteration of wine, and perhaps the most frequent, is that with water. If a small quantity of wine be poured on quicklime, and if the lime be slackened by it, the wine then certainly contains water. But if the lime continues whole, the wine is pure and unmixed.

*Ardent spirits* comprise all those liquors obtained by fermenting vegetable, and particularly farinaceous substances, to a certain degree, and afterwards subjecting them to distillation. All distilled liquors consist of a great proportion of alcohol or pure spirit, a greater or less quantity of water, and generally of a very small proportion of an empyreumatic oil, especially if distilled once only, or if this process be carried on too quickly. Pure spirits are perfectly free from this oil, which, from its burnt and acrid nature, is altogether indigestible. Proof spirits ought to consist of 55 parts of alcohol, and 45 of distilled water in 100: but rectified spirits of wine ought to have only 5 parts of water in the hundred: the specific gravity of the former being as 930, and that of the latter as 835, to 1000.

The intoxicating effects of spirits are but too well known; if they be distilled over peppermint, balm, anniseed, or carraway, their strength is not much increased; but if over cinnamon, cloves, mace, or other hot spices, they are rendered still more heating, and pernicious to health.

If drunk in hot weather, or after violent perspiration, they check this function, by contracting the vessels of the skin, and closing the pores. On account of this contracting power, they are sometimes of service to a person whose stomach is overloaded with beer or water, to assist their passage through the proper emunctories. After violent exercise and heat, a dram of spirits is more proper than cold water or beer, though a cup of tea or other diluent drink is preferable. After fat or strong food, spirits are exceedingly improper: for, instead of promoting the solution and digestion of food in the stomach, they rather tend to retard it. We may be convinced of this, by attending to the effects they produce on inanimate substances: for these are preserved from dissolution and putrefaction more effectually in spirits, than in any other liquid. Thus we may learn, that spirits will impede digestion, and render strong food taken into the stomach still more indigestible. Many persons are accustomed to take a dram as a remedy against flatulency: if the stomach be clean and undepraved, they will certainly be relieved by it; but, in the contrary case, their expectations will be disappointed.

Ardent spirits are rendered still more contracting, and prejudicial to the stomach, when combined with acids, as in punch; and, for the same reason, the habit of taking drams after fruit, or any acid vegetable, is absurd. Notwithstanding the frequent abuse of spirits, they afford one of the most excellent antiseptics; but, if the human body be already re-

plete with vitiated humours, and troubled with frequent eructations, it is too late to cure it with gin or brandy. These liquors, however, are of considerable service in preventing the bad effects of a moist and cold atmosphere, of pestilential vapours, of very unclean occupations, of a damp military camp, and occasionally too, of a temporary abstinence from food.

To persons of relaxed fibres, distilled liquors may, under certain limitations, be useful, as they increase the elasticity and compactness of the vessels. But to those, whose fibres are already rigid, spirits are obviously pernicious, and have a tendency to bring on a premature old age. They stop the growth of, and are otherwise very improper for, young persons.

That spirituous liquors incrassate and coagulate the fluids, we may easily discover in those who are addicted to the use of them: they have a thick blood, are troubled with constant obstructions of the intestines, and their unavoidable consequences; such as a gradual deprivation of the nervous system, loss of memory, debility of mind, hypochondriasis, jaundice, dropsy, and at length consumption of the lungs. The throat and stomach of habitual tipplers are rendered callous, and at length almost closed, the glands are indurated, and consequently digestion is in the highest degree impaired.

*Beer*, considered according to its ingredients, consists of water, malt, and hops;\* and

\* Besides these ingredients, Brewers are apt to add a number of other substances, some of which are extremely noxious, and all

in proportion to the quantity, quality, and manner of compounding them, it has received different names, and is possessed of various degrees of salubrity. The more water there is used in brewing beer, it is the better calculated to quench thirst; but less so, if it contain a great proportion of the mucilaginous and saccharine principle of the grain. Strong beer, therefore, is very nourishing, and may be employed with advantage as a medicine, in emaciated habits.

The greater or less addition of hops to the malt, furnishes us with bitter or sweet beer. The former kind is preferable as a medicine; the latter is more used as a common beverage; but it is apt to excite flatulency and diarrhœa. Hops, like other bitter substances, preserve beer in its vinous state, strengthen the stomach, and dissolve viscid phlegm. Beer made of a great proportion of hops, and a small quantity of malt, is a good beverage, and well calculated to allay thirst.

There are great varieties in beer, accordingly as it is fermented; some kinds, such as those made of oats, in some parts of Germany, which are scarcely allowed to ferment at all, are very cooling in summer, but soon spoil; others are only half-fermented, such as the Dantzic spruce or black beer; others again

prohibited by law. These are *Cocculus Indus*, Coriander Seeds, Alum, Liquorice and Liquorice Root, burnt Sugar, Treacle, Capficum, Ginger, Copperas, &c. &c.—An useful pamphlet has lately been published, called "*Every Man his own Brewer*," detailing this manufacture, and, at the same time, shewing practically, how any private family, or even lodgers, may make Porter and Ale in the smallest quantities, at less than half the expense at which these articles are purchased.

to a sufficient degree, like our porter and ale; and lastly some, which are more than sufficiently fermented, such as Burton ale, and most of the strong home-brewed ales. All these are different in their effects, according to the various degrees of fermentation.

Every kind of beer is inclined to ferment, on account of its constituent parts. If it be not properly fermented, this takes place in the stomach itself; the fixed air, being disengaged within the body, distends the stomach and bowels, and occasions flatulency and looseness. However, when drunk in small quantities, it is not attended with any great inconvenience, particularly in summer, or in hot climates. It is used with great advantage at sea, against that great enemy of the mariner, the scurvy; those persons who have corrupted gums, that are painful and bleed on the least touch, ought to drink half a pint of wort, or unfermented beer, every morning and evening, keeping this liquor for a good while in their mouth; and they may promise themselves great benefit from this simple remedy.

Many consider beer or porter as excellent, when it foams much and makes a head, as it is called, on the top of the vessel; which is drunk by some tipplers with avidity, before it disappears. But this froth is not a proof of its good quality; but rather of its imperfect fermentation, which is continued and completed in the stomach. It is likewise often artificially increased, by the addition of improper ingredients. The volatile vapour, or gas, disengaged from such beer in the sto-

mach and bowels, produces a quantity of stimulating and contracting air, by which the alimentary canal is almost at the same time expanded and contracted, so that the most dangerous spasms and colics may thence arise. Such beer likewise emits a quantity of sulphureous vapours; and for this reason it is dangerous to go into cellars, where it is kept in a state of fermentation. A candle will often be extinguished by the vapour of cellars, which is sometimes so noxious as to suffocate persons on their entrance.

If bottles filled with beer, ale, or porter, are not soon enough corked, it turns flat or sour, acquires an unpleasant taste, produces flatulency, colics, and spasms. If bottled and corked in proper time, the gas which it ought to contain is not dissipated; its agreeably pungent taste is preserved, and it is then a very excellent and nourishing liquor, which allays thirst, and does not affect digestion, like wine.—A person who has a good appetite, and takes nourishing food, requires no beer for its digestion; and, by drinking it, he is exposed to plethora, or a full habit, and all its concomitant complaints. Those, on the contrary, who take a great proportion of vegetable food, and have a weak stomach, will find a strong and bitter beer salutary.

As every new sort of beer is not equally grateful to the stomach, we would do well to desist from using that kind, to which we cannot habituate ourselves in the course of two or three weeks. On account of the great variety of this liquor we meet with in travel-

ling, it is much better to drink no beer at all on journeys, and instead of it to use lemonade, in hot weather, and wine or spirits mixed with water, when we travel in a damp and cold season.

Beer, in general, is nourishing, and has a tendency to fatten such individuals, as are of dry and rigid fibres, and whose bile is good. Hence the inhabitants of countries, in which beer is the principal beverage, are commonly more phlegmatic and indolent than those of wine-countries. Many sorts of beer, however, in which a greater than usual proportion of grain is used, contain much spirit, and are of a heating and inebriating nature. Such is, for instance, our Burton and several other ales, and all the strong kinds of foreign beer.

Light and well-fermented beer is a wholesome and, at the same time, diluent species of nourishment. With persons already plethoric, or disposed to become corpulent, the lightest beer generally agrees best. Thick and nourishing beer is of service to wet-nurses and the debilitated. Sweet beers are only nourishing, but all the bitter kinds are strengthening also. The latter are beneficial in a weak state of digestion, and to people troubled with acid in the stomach; yet sweet beer is more wholesome for daily use, and at the same time less exposed to dangerous adulterations. In short, beer is no proper beverage for people of a thick, black-bilious blood, and with a disposition to melancholy: it is the most useful species of drink to the weak, the lean, and the

laborious; provided they are not very subject to flatulency, nor troubled with diseases of the breast. In both of these cases, I have found it uniformly to disagree, and to be much inferior in salubrity to water.

A moderate use of fermented or distilled spirituous liquors is far less prejudicial to the constitution, than the habitual and excessive drinking of warm liquors. *Tea*, the common favourite among all ranks, if taken regularly twice a-day, and in large quantities, is attended with bad consequences. It thoroughly relaxes the coats of the stomach, weakens the bowels, predisposes them to flatulency upon the least occasion, and destroys all the energy of the digestive organ. These effects, however, are not so frequent, nor indeed to that extent, if the tea be drank strong, sufficiently diluted with milk, and sweetened with sugar: it is chiefly the warm water, which renders the tea of the common people so destructive to the constitution, as they generally make up for the indifferent quality of the tea, by the quantity of water.

The tea-leaf, which has employed the pens of so many eminent writers, still deserves some attention; as the nature and properties of it are but imperfectly understood. It certainly is an aromatic, slightly astringent, and somewhat narcotic plant. Whether it possess any diuretic, diaphoretic, and other virtues, for which it has been celebrated, is rather doubtful; as these may be in part owing to the great quantities of warm water, with which the infusions of it are made. Good tea, particularly the black sort, in moderate quantity,

and made strong, is antispasmodic and refreshing. It is, therefore, calculated to relieve the cramp of the stomach, and pains of the abdomen, if they proceed from flatulency. But, according to circumstances, it may even increase spasmodic contractions; for instance, if it arise from a vitiated bile, from worms, or from hysteric and gouty complaints; in all which cases tea will most certainly not relieve, but rather prolong the spasmodic contraction of the vessels. The relaxation which tea occasions in the first passages, renders it peculiarly hurtful to females of lax fibres, a thin blood, and irritable habits. To enumerate the great diversity of nervous symptoms, attending its abuse in such constitutions, would lead me too far from the prescribed limits; but so much is certain, that the vapours arising from liquors drunk very hot like tea, weaken the lungs, and dispose their votaries to frequent colds and catarrhs, which readily make a transition into consumptions.

Individuals of a rigid and solid fibre, of a dry and firm body, may be allowed to drink tea in moderation, as it will not easily hurt them. By adding a table-spoonful of old Rhenish wine, or ardent spirits, to every cup of tea, it may be so far improved, as to make it less flatulent; but the frequent repetition of it, even in this form, must be detrimental to the body. A moderate use of tea may sometimes be of service to persons in a perfect state of health; yet, for daily use, it cannot be recommended. It doubtless occasions a gentle stimulus, and rouses the mind for a short time;

hence it is perhaps the best and safest refreshment after violent heat and fatigue of the body. As the means of increasing perspiration, tea is an useful beverage to travellers in cold weather, when insensible perspiration is liable to be checked.

Hypochondriac and hysteric people, however, are much deceived in the efficacy of tea, as a diluent drink; for all the evils arising from relaxation, a weak stomach, and flatulency, under which such persons usually labour, are, by the habit of drinking tea, increased to the most alarming degree. The *cold* stomach, which they propose to *warm* by it, is a mere phantom of the brain; for this sensation of cold is nothing but relaxation, which cannot be removed by *hot* liquors, but is increased by every repetition of them.

It would be a great proof of a patriotic spirit in this country, if the use of this exotic drug were either altogether abandoned, or, at least, supplied by some indigenous plants of equal flavour, and superior salubrity. The Chinese have good reason to smile at our degenerate taste, when they are informed, that we actually possess an immense variety of the most valuable aromatic plants, much better calculated by nature to invigorate our stomachs, and to revive our spirits, than tea, which we purchase from them at great expense. These sentiments may be ungrateful to tea-dealers, or East-India merchants, but every honest truth should be candidly told to an unbiassed public.

It would undoubtedly be more conducive to our health, if we could altogether dispense with the use of warm liquors, at least when in a state of health. But, if this practice must be indulged in, we ought to choose the herbs growing in our own meadows and gardens, instead of making ourselves tributary to distant nations. With this intention, the late Dr. Solander introduced his *Savative Tea*; not with a view of making it a secret or quack-medicine, under which character it is now sold in this country, but of recommending the use of it to those individuals who require diluent liquors, and to the heavy, sluggish, and phlegmatic. Dr. Tissot had previously recommended the stalks of cherries, and the leaves of peach and almond trees, to the poor people of Switzerland, as substitutes for tea; but we possess a variety of plants infinitely superior to these, of which I have myself occasionally made trial. I shall divide these into three classes; namely,

1st, The strong, spicy, and balsamic plants, such as balm, peppermint, sage, and the like.

2d, The strongly aromatic flowers, among which those of the *Rosa pimpinellæ folia* (or the rose whose leaves resemble those of the Burnet-saxifrage) and the *wood-roof*, or the *Asperula odorata*, L., deserve the first place, and far excel in flavour all the teas imported from China; and lastly,

3d, The mild aromatic leaves and blossoms of trees and shrubs, for instance, the blossoms of the lime-tree and the black thorn, the leaves of the peach and almond-trees, and particu-

larly the first tender leaves of the *whortleberries*, or the *Vaccinium Myrtillus*, L., which cannot be distinguished from real tea, when properly gathered, and dried in the shade.

After having pointed out the best substitutes for Indian Tea, I cannot suppress my earnest wish, that even these indigenious vegetables may not be abused by decocting them in too much water, which, when swallowed hot, must be detrimental to the stomach, the lungs, the nerves, and the whole human frame. I cannot better conclude this important article, than by quoting the prophetic words of an experienced physician.—“Tea,” says he, “will induce a total change of constitution in the people of this country. Indeed it has gone a great way towards effecting that evil already. A debility, and consequent irritability of fibre, are become so common, that not only women, but even men are affected with them. That class of diseases, which, for want of a better name, we call nervous, has made almost a complete conquest of the one sex, and is making hasty strides towards vanquishing the other.” And Dr. Buchan emphatically concludes: “Did women know the train of diseases induced by debility, and how disagreeable these diseases render them to the other sex, they would shun tea as the most deadly poison. No man can love a woman eaten up with vapours, or washed down with diseases arising from relaxation.”

*Coffee* is a decoction of the well-known bean or berry of that name, roasted and ground into a powder. The bitter and astringent

powers of the beans, in some measure, correct the bad properties of warm water ; but if they be too much roasted, their empyreumatic oil is expelled, and they acquire an insipid taste. If, on the other hand, they be not sufficiently roasted, this burnt oil is not evolved to the surface of the bean, and the coffee acquires a bitter and unpleasant flavour. This beverage is generally considered as strengthening to the stomach. It promotes digestion, dispels flatulency, removes vertigo and torpor, exhilarates the mind, increases the circulation of the blood and insensible perspiration, attenuates viscid humours, is diuretic, and sometimes gently aperient. These properties of Coffee being, in a great measure, confirmed by experience, justly make it a valuable medicine, which is eminently qualified to cure the most troublesome head-achs, provided they originate from the stomach, or from a bad state of concoction. Coffee drunk after dinner promotes digestion ; and agues, diarrhœas, and giddiness, have been frequently removed by it. Its subtle oil stimulates the solids, rarefies the blood, and consequently is of particular service to females of a sedentary life, and to those who suffer from phlegmatic and catarrhal diseases. If drunk too strong, it affects the nerves, and by its penetrating property often occasions sleeplessness, and tremor of the hands ; but, in some phlegmatic and indolent individuals, it is apt to excite sleep.

If coffee be not used merely as a diluent for relaxing the fibres, it ought to be made strong. The best proportion is, one ounce of

well-roasted and ground coffee to one pound or one pint of water, which should be just allowed to boil up : for the longer it is boiled, it loses the more of its volatile and aromatic particles, and consequently becomes weak and insipid.—As coffee is possessed of excellent antispasmodic virtues, it is a favourite beverage with the hypochondriac and the hysteric ; and according to early observation, it is also the best and most effectual remedy in spasmodic asthma.

The steam of boiled coffee has frequently been beneficial to weak eyes. If drunk in the morning, and immediately after dinner, of a proper strength, and not above one or two small cups, it is a wholesome substitute for tea or spirits, particularly to persons in a good state of health, and to such as are not habitual wine-drinkers, or of a very irritable temperament.—Lastly, the coffee of the Levant far excels that imported from the West Indies, which is frequently steeped in sea-water, in order to make it weigh heavier. This fraudulent practice may be easily detected, by soaking the raw coffee in water, and examining its taste.

An *immoderate* use, however, of this decoction is prejudicial to the healthy, and destructive to the diseased : it debilitates the latter still more, by causing great undulations in the blood, tremor of the limbs, giddiness, and a certain insupportable timidity. It leads people of a sanguine temperament, and particularly females, to the long train of all the fashionable nervous diseases. It frequently occasions a disagreeable eruption in the face, and brings

on many troublesome disorders, occasions bleedings of the nose, and sometimes spitting of blood, induces frequent hemorrhoids, a hectic cough, and at last consumption and death.—If coffee be drunk after dinner, with a view to promote digestion, it requires no milk to dilute it, and render it weaker: but, if it be used for breakfast, some milk or cream is necessary, to sheath or neutralize the empyreumatic oil it contains, which fires the blood, and occasions violent flushings, accompanied with choleric sensations.

All the kinds of mock coffee, made of rye, wheat, peas, dried carrots, beet, the succory-root, and the like, have little resemblance to it, except what they acquire by their burnt taste and empyreumatic oil. A coffee made of acorns is much recommended in asthmatic and spasmodic complaints; but as it contains an uncommon quantity of oil, which is dangerous and heating to the blood, too much circumspection cannot be employed in the use of it. From my own experience, I recommend to begin with adding about one eighth, then one sixth, and gradually a greater part of the burnt acorns to the coffee, till at length they may be used in equal quantities.

*Chocolate*, especially when boiled with milk and eggs, is exceedingly nourishing: but the spices with which it is mixed, such as cinnamon, cloves, musk, vanilla, and the like, make it more heating and less wholesome. Vanilla, which we always find in the Spanish Chocolate, is an extremely volatile and pungent aromatic; even its flavour is frequently insupportable to

hysterical and hypochondriac persons; it occasions violent head-ach, trembling, giddiness, and other symptoms, occurring in these complaints. The common chocolate, prepared with sugar, eggs, milk, and water, is the most nutritive and wholesome; but a too frequent and immoderate use of it is always hurtful, particularly to the individuals before alluded to, as the cacao is too fat and indigestible to them, and creates a false or forced appetite. *Cacao*, of itself, is less heating and lighter than if made into chocolate, but it is not so nourishing. The immoderate use of this oily beverage is apt to induce a febrile state in young people, and to supply the sedentary with superfluous nourishment; while it frequently brings on, like coffee, a state of irritability and uneasiness. To the corpulent and weak it is improper; and if they be immoderate eaters, they are hastening to contract inflammatory diseases and apoplexies. It also disagrees with persons much employed in mental pursuits; and those who imagine that it will supply their losses, sustained by nocturnal debaucheries of whatever kind, will find themselves disappointed in their hopes: by continually drinking chocolate, and using other nutritive substances, they will, indeed, be stimulated to new irregularities, but eventually at the expense of their palsied nerves, and their broken frame. In children threatened with a wasting, or *tabes dorsalis*, as likewise in some kinds of consumption in adults, Chocolate, with a sufficient quantity of milk, may be beneficial; but even in these cases a strong decoction of roasted

oatmeal in milk, with a small addition of chocolate, is much better calculated to effect a cure.

*Punch* is a well-known beverage, the composition of which requires no description, as it may be made of every kind of spirituous liquor, diluted with water, acid and sugar. If a proper quantity of acid be used, it is an excellent antiseptic, and well calculated, to supply the place of wine, in resisting putrefaction, especially if drunk cold and with plenty of sugar: it also promotes perspiration; but, if drunk hot and immoderately, it creates acidity in the stomach, weakens the nerves, and gives rise to complaints of the breast. After a heavy meal it is improper, as it may check digestion, and injure the stomach.

*Negus* is one of the most innocent and wholesome species of drink, especially if Seville oranges be added to red Port wines, instead of lemons; and drunk moderately, it possesses considerable virtues in strengthening the stomach; but, on account of the volatile and heating oil in the orange-peel, negus, if taken in great quantities, is more stimulant and drying than pure wine itself. Persons troubled with the hemorrhoids, and diseases of the breast, should not indulge themselves in this, nor in the preceding species of drink.

I cannot conclude this section without mentioning vinegar and oil, two substances which partly belong to the department of drink, and partly to that of spices.

*Vinegar* is an excellent preservative of animal substances from putrefaction, especially in a warm temperature ; and I cannot but regret that this invaluable liquor is too little used in our kitchens, as well as upon our tables. It promotes digestion, and is perhaps never communicated to the blood in its acid state : hence it is an erroneous notion, that vinegar is detrimental to the secretion and quality of the milk in wet-nurses. In some individuals, however, it is apt to produce a sudorific effect, and even laxity of the bowels, on account of its astringent property. Used with moderation, as an article of seasoning rather than drink, especially in warm weather and with animal food, it is both savoury and wholesome. But we ought to be careful to obtain *good* vinegar ; for various kinds of it, which are made of sloes, the husks of nuts, and other strong astringents, certainly are pernicious to health. The best and most palatable vinegar is that obtained from white wines, raisins, and sugar.

*Oil* is preferable to animal fat, but ought to be fresh, mild, and of a sweetish taste. It seldom or never agrees with weak stomachs ; for in them, even in its mildest state, it easily generates a rancid acrimony, extremely injurious to digestion. It should be eaten with much bread, when used in salads or otherwise, as it requires a powerful and active bile to assimilate it to alimentary matter. Olives and almonds yield the greatest quantity of oil ; and next to Province oil, that expressed from walnuts and chesnuts, is the sweetest, and easiest of digestion.

*Of Spices.*

Spices, of themselves, are not nourishing, but are used merely to improve the taste and flavour of substances, to prevent flatulency, and to promote digestion. Some spices, being extremely volatile, and occasioning too strong a stimulus, do more harm than good. As they are apt to heat the blood, to increase perspiration, occasionally to affect the head, and to stimulate the nerves, spices, in general, should be used only by persons possessing a strong constitution, or by those of a lax fibre, and cold phlegmatic habit: as, on the contrary, individuals naturally lean and dry, as well as the choleric and phlegmatic, ought to be sparing and cautious in the use of heating spices. The most conducive to health would be the indigenous spices, though some of the foreign kind have now become indispensable in our present mode of living. The most common, and perhaps the most useful, are:

1. *Salt*. It corrodes the fibres of plants and animals, disorganizes the connection of parts too firm for the solution of the stomach, dissolves the glutinous parts, and prepares them for being better digested by the stomach. Provisions of a tough and viscid consistence, therefore, require much salt; for instance, beef, mutton, fish, peas, beans, fat, &c.\*—Hence

\* There is little danger of using too much salt with *fresh* victuals, as the only consequence arising from excess would be a slight laxity of the bowels.—In order to obtain salt as pure as possible, and free from the bitter magnesia, which is the great promoter of putrefaction, I take this opportunity of recommending an ingenious and simple process lately invented by *Lord Dundonald*, one of the most zealous and able cultivators of the useful arts: Dis-

salt beef and herrings agree so well with vegetables, because the abundance of salt in the former, seasons the latter. But too copious a use of salted provisions is extremely prejudicial; they weaken the solids, and the blood becomes thin, acrid, and disposed to putrescency; hence arise scurvy in all its stages, eruptions of the skin, consumptions, and other diseases.

2. *Sugar* is at present one of the first necessities of life. It is an unfounded conjecture, that sugar renders the blood thick or viscid; on the contrary, it is possessed of diluent and attenuating properties. But the immoderate use of sugar, especially the moist and coarse sort, may in a considerable degree prevent digestion, by consuming the oleaginous part of our fluids, impeding the assimilation of food, and generating mucus and acidity in the alimentary canal.

It has frequently been asserted, that sugar injures the teeth: this, however, is not strictly

solve as much common salt in a given quantity of boiling water as it is capable of containing in solution. Take another quantity of salt not larger than the former, and put it into a glass funnel, or similar vessel of wood or earthen-ware, which ought to be lined with coarse thick linen cloth. While the strong brine is hot, pour it over the dry salt, of which it will not dissolve a particle, but merely wash away the magnesia and other impurities adhering to its surface; and by repeating this effusion several times, the washed salt will become tolerably pure. The whole of this process depends on the principle, that water can dissolve only a certain quantity of salt, and that the magnesia may be washed away by such a supersaturated solution, while the salt to which it adheres remains insoluble. Salt thus purified will doubtless be more wholesome, and more effectual for all the purposes of salting and pickling provisions; as the magnesia contained in the common salt renders double, perhaps triple the quantity necessary, which would be required, were it in a pure state, or deprived of the magnesia.

true; for it is only by its vitiating the stomach, and generating impure blood, that the teeth become sympathetically affected. Hence persons of weak digestion, those with debilitated nerves, the hypochondriac, hysteric women, and especially children subject to complaints arising from worms, ought to use this luxurious substance sparingly, and only occasionally. If moderately used, it promotes digestion, being a gently solvent and stimulating salt. But, where people take it without moderation, sugar may prevent digestion, not on account of its substance, but by obstructing the assimilation of food; so that it produces slimy and acid matters in the alimentary canal. The acid which sugar contains, renders it an excellent remedy against putrescence. The finest sort of sugar being freed of all impurities, is the best and most wholesome. Yet, in forethroats and other catarrhal affections, I would prefer sugar-candy or moderately fine loaf-sugar, to that which is double refined, on account of some particles of lime and clay, necessarily remaining in the latter, from the manner in which it is prepared.—Other sweet substances, such as honey, cannot altogether supply the place of sugar, as they are not possessed of the same properties; but there have been already made some very successful experiments with the American maple-tree, (*Acer saccharinus*) which afford great hopes that we may obtain this valuable and indispensable salt, in future times, from that quarter of the globe, in sufficient quantities, and at a reasonable price, when the most flagitious of all

trades, that in human flesh, shall have been entirely abolished.\*

3. *Honey*, like sugar, contains an acid, but many more inflammable particles; it easily ferments, and therefore occasions flatulency. In some particular habits it is apt to occasion gripes and looseness: as a medicine, it is useful to the asthmatic, to promote the expectoration of tough phlegm; and so far it is an useful detergent and aperient. But, as a part of diet, when immoderately used, it is hurtful to weak stomachs, and ought to be avoided by people who are troubled with a superabundance of bile, and whose humours incline to putrefaction.

4. The different species of *Pepper*, being strongly heating and stimulating, should be used with precaution. Yet its peculiar warming and stomachic virtues make it an excellent spice, and proper to be used with fat, tough, and smoked meat, with flatulent vegetables, with the cooling cucumbers and melons, as well as with fish and other substances difficult of digestion. Pepper ought, for these purposes, to be coarsely ground. If taken in whole grains, it imparts to the stomach only a small part of its virtues, and cannot be reduced in digestion. In this form it is an old and effectual domestic remedy of the Germans, against viscosity in the stomach, flatulency, weak digestion, and consequent giddiness. For these purposes, from six to ten pepper-

\* I must on this occasion refer the reader to the account I have given of the *beet-root*, (p. 249.) which promises to become an invaluable, copious, and permanent substitute for sugar.

grains should be swallowed in the morning, on an empty stomach. Yet I would not advise this practice to be followed, except to some very vitiated stomachs, which have been accustomed to spices and spirituous liquors, and with whom the pepper may serve as a substitute for drams.

5. *Cubeb*s, *Cardamoms*, *Vanilla* and *Cloves*, are hot, pungent, and consequently improper for daily use.—*Cubeb*s are much inferior in pungency to pepper.—*Cardamoms* are a warm and grateful aromatic; they do not, like those of the pepper kind, immoderately heat and inflame the bowels; hence they certainly deserve the preference for common use.—*Vanilla*\* is warming, resolvent, strengthening to the stomach, and a remedy for flatulency. In chocolate, it assists the digestion of the oily substance of the cacao.

*Cloves* are hot and stimulant aromatics, but formerly seldom obtained genuine in this country, as the Dutch frequently mixed them with other cloves, previously deprived of their essential oil by distillation.—*Mace* and *Nutmeg* are less heating, and therefore preferable for common use; but the former is still more

\* *Vanilla* is the pod of the *Epidendrum*, L. growing in Cayenne and some parts of Spanish America. The largest pods are sometimes six inches long, narrow, and almost triangular, soft, oleaginous, externally of the appearance of leather, and internally filled with a dark brown pulp, in which we find a great number of small black or brownish red and shining seeds. These have a pungent aromatic and oily taste, and a strongly balsamic odour, much resembling that of the Peruvian balsam. A very small proportion of these seeds, for instance, a grain to an ounce, is sufficient to impart to the Chocolate the very agreeable flavour which we generally meet with in that imported from Spain and Milan.

so than the latter, which is supposed to have an astringent virtue, and is employed with that intention in diarrhœas and dysenteries.—*Cinnamon* is undoubtedly the most delicate spice, but is seldom obtained pure from the mercenary Dutch, who were accustomed to send us more Cassia than real cinnamon. The *Cassia* bark, though resembling that of cinnamon in taste, is much less heating, and certainly more beneficial for common use than cinnamon, which is better calculated to answer medicinal purposes. The bark of cassia is thicker and coarser; it breaks short and smooth, while the cinnamon breaks fibrous and shivery.—*Pimento*, or Jamaica pepper, resembles in its smell a mixture of cinnamon, cloves, and nutmeg, whence it has received the name of *all-spice*; it is milder than the East-India pepper, and is an useful addition to broths and stewed dishes, when used, as it ought to be, in whole grains.—*Ginger* is one of the most agreeable and wholesome spices, especially boiled whole in beer, and drunk by people moving in the open air, and in cold weather. But this spice, as employed by the bakers for gingerbread, does a great deal of mischief, especially to the stomachs of children; though it may occasionally be serviceable to travellers, early in the morning, and on an empty stomach.\*

\* If the bakers knew what the substance is, with which they gild its outside, to invite children to eat their ill-contrived gingerbread, I venture to hope they would desist from so pernicious a practice. This gold leaf, or Dutch gold, is actually manufactured of brass or copper, one of the most virulent metallic poisons.

The indigenous, spicy, and balsamic herbs, such as *parsley*, *marjoram*, *thyme*, *sage*, and the like, cannot be too much recommended for culinary use, especially in broths ; as they are well calculated, by their aromatic virtues, to assist the digestion of many strong articles of food, which daily cover our tables ; and these excellent herbs are not liable to the adulterations with which most of the foreign spices are vitiated.

6. Among all the native spices, there is none, in my opinion, which excels, in medicinal virtues, the common *Caraway*. The seeds of this plant are the mildest and most useful carminative we possess. To people of a weak digestion, troubled with flatulency and colics, they afford the most certain relief, if used in sufficient quantity ; for instance, a table-spoonful at a time, early in the morning, and one hour before a meal : or still better, if these seeds are plentifully used in bread, and among cooked victuals. Yet here I must caution those of a hot and bilious temperament, as likewise individuals liable to obstructions and habitual costiveness, not to use these seeds indiscriminately, and without consulting a professional man.

Caraway-seeds, finely pounded, with a small proportion of ginger and salt, spread upon bread and butter, and eaten every day, especially early in the morning, and at night before going to bed is successfully used in Germany as a domestic remedy against hysterics, and will, no doubt, effectually cure the disease, provided it does not arise from improper

diet, obstructions of the intestines and other vessels, passion, bile, acrid humours, and the like; in all which cases the caraway and ginger will certainly do more harm than good; as each of these causes must be removed by the apposite means.

If, however, caraway be kept in a pounded state, for the purpose of overcoming the disposition to flatulency and indigestion, it soon turns rancid, and may prove hurtful, on account of the strong oil it contains.—The plant of caraway is one of the early spring-herbs, and makes an excellent addition to salads. The seeds, when distilled with ardent spirits, yield a very heating and pernicious oil, which renders such spirits still more detrimental to health, than when they are in a pure state.

CLAS-

## CLASSIFICATION

*Of the various Species of Food, Drink, and Spices, according to their individual salubrity.*

## I. FOOD.

## Division First.

*Alimentary substances containing wholesome fluids.*

CLASS I. Articles affording strong nutriment.

ORDER I. Vegeto-farinaceous substances.

Genus, i. With soft juicy fibres.

1. *Such as contain a saccharine matter ; as the skirret or sugar-root (Sium Sifarum, Linn.) the common carrot, beet, and polypody-root (Polypodium vulgare, L.)*
2. *Sweetish substances affording a tender farina or meal ; as the parsnip, the turnip-rooted cabbage (Napobrassica,) the colewort (Caulis Rapicius,) viper's grafs (Scorzonera, L.) the goat's-beard, or falsafy (Tragopogon Pratense, L.) the Solomon's seal (Convallaria Polygonatum, L.) parsley-root, asparagus, turnips, and potatoes.*

Genus ii. *Substances affording flour, or those of a viscous, earthy consistence ; viz. every species of grain, as wheat, rye, barley, oats, buck-wheat, millet, maize, or*

Indian-Corn, the chickling-vetch (*Lathyrus Tuberosus*, L.) and the like.

ORDER II. Gelatinous animal substances.

*Genus i.* Of a soft and juicy muscular substance; viz. veal, lamb, young beef, mutton, pork, venison, turtle, hare, rabbits, badgers, domestic fowls, pheasants, partridges, the greater number of land-fowl, oysters, small lobsters, and fresh eggs.

*Genus ii.* Of a hard and tough consistence; viz. all the animals before mentioned, when old; as well as the bustard, the starling, the woodpecker, the sparrow, the goose, the duck, the lapwing, muscles, snails, crabs, hard boiled eggs, &c.

ORDER III. Fat or butyro-oleaginous substances.

*Genus i.* Of the sweet kind; viz. cacao, sweet almonds, walnuts, hazel-nuts, water-caltrops, chesnuts, beech-nuts, cashew-nuts (*Anacardia*,) pistachionuts, wild pine-apples (*Karatas*,) milk, and fresh cheese.

*Genus ii.* Of the bitterish and tart kind; viz. bitter almonds, acorns, all the seeds of fruit, and olives.

CLASS II. Slightly nutrimental substances.

ORDER I. Those of a viscous and watery consistence, or whose vegetable mucilage is diluted with much water.

*Genus i.* Of a sweet taste; viz. melons, and several species of pears and apples,

sweet citrons, lemons, oranges, figs, mulberries, raspberries, sweet grapes, cherries, and plums, jujube-berries, dates, &c.

*Genus ii.* Of a sweetish taste; viz. green peas and beans, white cabbage, cauliflower, spinach, orach, blite, or strawberry-spinach, cucumbers, and gourds.

*Genus iii.* Of a compound sweet and bitter taste; viz. the succory, the rampion (*Phyteuma*, L.), the borage, the sow-wort (*Serratula*, L.), the young shoots of hops, the sow-thistle (*Sonchus*, L.), the hedge-mustard, artichokes, capers, the brook-lime, endives, and lettuce.

*Genus iv.* Of a mildly sweetish and spicy taste; viz. celery, angelica, shepherd's-needle (*Scandix cerefolium*, L.), fennel, and the common balm (*Melissa officinalis*, L.)

*Genus v.* Of an acrid taste; viz. radishes, turnip-radishes, horse-radishes, tarragon (*Artemisia Dracunculus*, L.) scurvy-grass, and rue.

*Genus vi.* Of an acid taste; viz. sorrel (*Rumex acetosa*, L.), purslane (*Portulaca*, L.), sour citrons, lemons, limes, cherries, plums, &c.

*Genus vii.* Of a vinous quality; viz. all sweet apples, particularly rennets, apples of Borstof, and some few varieties from America; the pine-apple (*Ananas*), the honey or paradise-apple,

shaddocks or sina-apples, bramble-berries, straw-berries, whortle-berries, gooseberries, currants, grapes, apricots, peaches, and nectarines.

*Genus viii. Of a tart and astringent taste; viz. all the wild-growing apples and pears, quinces, cran-berries, red whortle-berries, bar-berries, the green summer and winter pears, four apples, medlars, the fruit of the dog-rose or hip-tree, and of the service-tree, sloes or the fruit of the black-thorn, and the green Brasilian plums.*

ORDER II. *Those of a gelatinous watery consistence.*

To this order belong all the various species of fishes.

### Division Second.

*Alimentary substances, containing unwholesome fluids.*

ORDER I. *Those of an acrid nature.*

1. *Coarsely viscous and saline substances; viz. all salted and smoked animal food, both of quadrupedes and fishes.*
2. *Putrescent, or easily putrescible substances; viz. the ram, the he-goat, the bull, the otter, water-fowls, the blood of animals, roasted eggs, tainted eggs, and lastly all the flesh of wild and tame animals kept too long, with a view of making it more tender.*

3. *Substances of a furry and leathery appearance, or such as discover a suspicious acrimony; viz. truffles, morels, and all kinds of mushrooms.*

ORDER II. *Those of gross fluids, or a coarse earthy consistence; namely, the various leguminous seeds, such as dried peas, beans, lentils, and the like.*

## II. DRINK.

### (A) Watery Liquors.

I. *Simple or uncompoundd; namely all kinds of common water.*

II. *Mucous-watery-spiritous.*

1. *All fermented liquors known under the name of beer or ale.*
2. *Spicy-balsamic liquids; such as the vernal sap of the birch and maple-trees, as well as the artificial preparations of tea, coffee, and chocolate.*
3. *Sweetly-acidulated; namely, lemonade, orgeat, mead, must, and the like.*

### (B) Spirituous Liquors.

I. *Distilled: namely, all kinds of ardent spirits, from whatever grain or vegetable substance they may be extracted.*

II. *Fermented: All kinds of Wine.*

1. *Sweet wines; those of Hungary, Spain, Italy, Greece, and the Cape wine; as likewise all wines made of currants, raisins, &c.*

2. *Slightly acidulated wines* ; among which Champaign, Rhenish wine, or old Hock, and that of the Moselle, are the principal.
3. *Acid and tart wines* ; to which chiefly belong the wines of Franconia and Saxony.
4. The *acidulated sweet wines* ; such are most of the French wines, and particularly Claret ; and, lastly,
5. The *sharp and astringent wines* ; the chief of which are the wines of Oporto and Burgundy.

### III. SPICES.

1. Of the *sweet* kind ; such as sugar, honey, manna, and the inspissated sap of the maple and beech-trees.
2. Of the *acid* kind ; namely, the juice of citrons, lemons, unripe grapes, &c.
3. Of the *saline* kind ; namely, common salt, whether obtained in a solid form, as rock-salt, or from the evaporation of the sea and salt-springs. Lastly,
4. Of the *pungent and balsamic* kind ; such as garlic, shallot, onions, chives, nutmeg, mace, pepper, pimento, cubebs, vanilla, cardamoms, bay-berries, juniper-berries, ginger, calamus, cloves, cinnamon, saffron, carraway, coriander, fennel, parsley, dill, sage, marjoram, thyme, penny-royal, mugwort, hyssop, peppermint, and rue.

## C H A P. IV.

*Of EVACUATIONS ;—their different species, as well as their peculiar nature investigated ; together with the necessary directions for their management, according to the different states of the body.*

THE evacuations of the body, from its superfluous, impure, and noxious particles, are no less necessary than its nourishment. The same power which changes and assimilates our food and drink, likewise effects the due and timely evacuation of what is secreted. It is an object of the first consequence, that nothing remain in the body, which ought to be evacuated ; and that nothing be ejected, which may be of use to its preservation.

How many persons do we find complaining of bad health, notwithstanding every attention they pay to the air they breathe, to aliment, exercise, sleep, &c. ; while others enjoy a good state of health, though totally careless with regard to these particulars. Indeed, much depends on a proper state of the evacuations.—If these be disordered, the most rigorous observance of dietetic rules is insufficient to insure our health ; while, on the contrary, most of those rules may be neglected, for some time, without any injurious consequences, if the evacuations be duly attended to.

Nature removes not only the noxious matter, or such as is in a state of corruption, but likewise the useful fluids, if they become superabundant; for instance, the milk, the semen, the blood. In such cases, therefore, these must be considered as objects of evacuation, equally natural and salutary.

By *stool*, the thick and feculent remains of assimilated food are evacuated; for every article of aliment contains more or less dregs, and their smallest particles only can be changed into the milky fluid, or chyle.

By *urine*, we eject the oily and saline particles secreted from the blood, in a diluted state; which prevents these particles from injuring the external membranes, by their irritating acrimony.

By *insensible perspiration*, which is carried on through the smallest orifices of the pores, the most subtile and noxious particles of the fluids are evaporated; which, if they were retained within the body, would lay the foundation of its total corruption.

Nature expels all crude and acrid substances by these three principal emunctories; and accordingly as they are disordered, diseases of different degrees of malignity and duration will necessarily ensue.—Nature also frequently relieves herself by more unusual channels; such are, the bleeding of the nose in plethoric young men, the hemorrhoids with which persons of a middle age are sometimes troubled, the various ulcers common to those whose fluids are in an impure state, the excretions of saliva, and the expectorations of others, &c.

By a premature suppression of these troublesome but salutary efforts of nature, great mischief may be produced to the individual.

Many persons perspire much under the arm-pits, others in their hands or feet ; others again are subject to eruptions in the face or other parts of the body : such canals, however, if Nature be once accustomed to eject by them certain useless and hurtful particles, cannot be hastily stopped, without occasioning greater and more dangerous inconveniences ; cleanliness, in the strictest sense of the word, is almost the only safe remedy to counteract their fatal effects.

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### *Of Evacuations by Stool.*

As the food and drink we consume every day, necessarily deposits useless matter, a daily opening by stool is extremely salutary ; particularly to persons subject to costiveness and the many disagreeable consequences thence arising. Of these I shall only enumerate frequent head-achs, difficult breathing, flatulency, eructations, and spasms : hence peevishness of temper, general lethargy, and at length, hypochondriasis ;—the abdomen of such persons feels tumid ; the circulation of the blood in the intestinal vessels is retarded ; and, consequently, the general circulation interrupted. These complaints, sooner or later, certainly attend habitual costiveness ; especially if no other kind of evacuation, as that by urine, or insensible perspiration, be in an uncommon degree increased.

In healthy individuals, the evacuation by stool usually takes place once or twice a-day; and, according to the habits of the person, either in the morning or evening. Those who are troubled with costiveness should visit the customary retreat, regularly every morning at a fixed hour, and thus endeavour to promote this necessary evacuation by proper efforts, though they may not, at the moment, feel much inclination; for it is well founded on experience, that Nature at length will be habituated, by perseverance, to observe a certain regularity in this respect. The most proper time for these attempts is early in the morning, or late in the evening.

Whatever dietetic means may be adopted to promote stool ought to be employed either from three to four hours previous to the time we wish to succeed; or immediately before going to bed. If in the morning, we ought to rise early, to take first a slice of bread with much fresh butter; then eat some boiled prunes; drink two or three cups of the decoction; and, if necessary, assist the operation of the whole with a tea-spoonful or two of cream of tartar in treacle. Thus prepared, we ought to walk a little in the open air, or, if the weather be unfavourable, about the room; to rub the lower belly with the palm of the hand; and, when we sit down, to retain the breath, by frequently, though moderately, inspiring; and, lastly, to change the posture of the body, from a straight to a crooked and sidelong direction, till we succeed in the attempt.

Although these trials should repeatedly fail, we must not be discouraged from persevering in them; nor ought we, without absolute necessity, to choose any other than the wonted hour to attain the end proposed; so that this, at length, may become the only time, when Nature shall spontaneously assist our endeavours. During these practices, however, the choice of our diet is of the greatest moment; as we can powerfully promote the desired end, by living chiefly upon rye-bread, spinage, boiled fruit, particularly prunes, decoctions of currants, the sweet and emollient vegetables, especially the beet-root, and occasionally salted meat; the last of which should be assisted with much drink, not of the spirituous kind, but rather of a mild and aperient nature, such as sweet table-beer, whey, infusions of malt, apples, pears, and the like.

It deserves to be remarked, that if every effort of this kind prove abortive, the voluntary exertions in promoting stool should not be carried to an extravagant degree; as by such unnatural pressure we may bring on ruptures, the bursting of veins in the rectum, or the piles. Hence it is more adviseable to abstain, for some time, from all crude and solid aliment, and to use only such articles of food and drink as have been before pointed out. And if this also should not be attended with the desired effect, we may then have recourse to the mild purgatives, such as rhubarb, senna, cream of tartar, and the neutral salts.

While too much rest, and a sedentary life, prevent this species of daily evacuation, gentle

exercise, accompanied with serenity of mind, almost certainly promote it. In many families, costiveness is an habitual and hereditary distemper. Sometimes too it originates from a weakness of the intestinal canal brought on by diseases, but more frequently from the habitual use of certain substances of food and drink; for instance, the lean flesh of quadrupeds, game, the leguminous vegetables, red Port wine, strong and bitter malt liquor, and the like. Hence the pre-disposing cause of the complaint should always be attended to. If it arise from weakness, red wine, bitter ale, and other corroborants, are well calculated to effect a cure. In every instance, frequent exercise in the open air is extremely useful. Persons living sparingly on animal food, and who are otherwise temperate in their passions and desires, are seldom deprived of this natural benefit; and even though they should be without it for two or three days together, they have little to apprehend from such irregularity; for, as they do not wantonly overload their stomach, the accumulation of impurities cannot be considerable.

Where weakness and atony, or laxity of the intestines, are the causes of a costive habit, the external use of cold water, by affusion on the lower belly or merely washing it with that fluid, is frequently preferable to all other dietetic remedies. This is one of the most simple means of preventing painful costiveness; though it ought not to be applied indiscriminately, and least of all in those cases where

the use of the cold bath is improper and hurtful.—If debility and relaxation of the intestinal canal be the cause of costiveness, clysters of cold water alone are generally productive of singular benefit; yet these also cannot be used without many exceptions—not, for instance, by females, during the menses, by persons afflicted with the piles, or having weak lungs, nor in certain kinds of colics and spasms.

The discharges by stool ought to be neither in too liquid nor too dry a state. Strong labour, heating drinks, and long fasting, render them disagreeably hard, even in the healthiest individuals; from the feces remaining too long in the region of the lacteals, so that the nutritious or milky part of the concocted mass is exhausted to the last drop, and there remains behind no other but dry, excrementitious matter. These stools, therefore, are frequently a symptom of good digestion, such as attends sound constitutions in general.

Too dry excrements, in the form of balls, especially in delicate individuals, occasion head-ach, inflammation of the eyes, febrile complaints, hemorrhoids, ruptures, paralytic affections, and frequently produce flatulency and spasms, in persons subject to hysterics and hypochondriasis: nay, even the suppression of flatulency is extremely dangerous. Those who are apt to delay going to stool, expose themselves to many serious inconveniences. When this sensation is lost, it does not usually return for some time. The feces collected in the intestinal canal powerfully distend it, give rise to the blind hemorrhoids, and sometimes even

to a falling down of the anus; the excrements become dry, and their re-absorbed fluid parts irritate and vitiate the blood, and produce many obstinate distempers. If a person has been costive for several days, the inclination to go to stool is sometimes lost, until restored by artificial means.

Loose and too frequent stools are common with those, who take more aliment than their stomach can digest; for the food, from the stimulus occasioned by its corruption in the alimentary canal, is too soon ejected, without being duly assimilated. Hence debilitated persons, who eat immoderately, generally are thinner and less muscular than others, who observe a regular and temperate diet. The stools are a tolerable criterion of the quantity and quality of the food we have taken, and whether the digestive powers be adequate to its concoction. For, in weak intestines, the unassimilated matter of food turns acrid, and contributes nothing to the nourishment of the body. Thus it happens, that debilitated individuals, and such as are of a phlegmatic habit, continue lean and emaciated, whatever quantity of food they consume: For this reason, they ought to live principally on milk, eggs, broths, tender meat, emollient vegetables; and to eat only when they feel a true appetite, and after moderate exercise.—It is not the man who takes comparatively little food, that can be called temperate; but rather that person who makes use of no more aliment, than he is able to digest. Thin and copious stools, therefore, are a certain proof of indigestion.

Some persons are accustomed to go to stool more than once a-day, others only every second day, and yet enjoy a good state of health. It is, however, more desirable and wholesome to have a regular evacuation every day; and children especially ought to have two or three discharges daily. Aged persons, in general, have but one stool in a day. The air we breathe, makes, in this respect, a remarkable difference. The more we perspire in summer, the fewer are the evacuations; and, on the contrary, moderate exercise is productive of more regular excretions, than that which is too violent. Robust and muscular individuals perspire more than the weak and enervated; hence the evacuations of the former, by other emunctories, are more limited; while the latter, whose fluids are not duly determined to the surface of the body, have more frequent openings by stool.

Obstructions and costiveness, of which many persons now complain, are owing to a variety of causes, but chiefly to our luxurious mode of living, and to the custom of making too many meals through the day. The time requisite to the digestion of a meal cannot be well ascertained, as some stomachs concoct quickly, and others slowly; and there is a remarkable difference in the degrees of digestibility, among the various species of food; the nature and properties of which have been already pointed out in the third Chapter. But this may serve as a general rule, that we ought never to take a new supply of food, till the preceding meal be digested.

Some moderate livers, after having deviated from their usual temperance, do not feel any inconvenience till after two or three days, when they are troubled with copious evacuations, head-ach, uneasiness and dejection of mind. Such excesses are frequently accompanied with serious consequences, of which costiveness is only the forerunner. Neither the emetics, or laxatives, to which the glutton has recourse, nor the fashionable stimulants and strengthening bitters, can prevent or remedy the ultimate effects of such brutal habits. The emetics and purgatives inevitably weaken the first passages, and lay the foundation of constant obstipations; while the stimulants deprive the intestines still more of the necessary humours, and render the evil much greater. The most proper means of preventing these hurtful consequences, are the following:

1. A due degree of bodily exercise, by which the muscular power will be invigorated, the nervous system strengthened, and the circulation of the blood promoted.

2. We ought to take a proportionate quantity of drink to our victuals; a circumstance not always sufficiently attended to, by persons of a sedentary life. Drink dilutes the food, and softens the bowels. A weak, well-fermented, and well hopped beer, is an excellent beverage: so is water with the addition of a little wine. Warm diluents, on the contrary, have a manifest tendency to increase obstructions, by the relaxation they produce in the intestines.

3. Let us choose the quality of our food, according to our constitutional wants. Those who cannot digest well, ought to avoid all thick, mealy dishes, pastry, onions, warm and new bread, and such as is not thoroughly baked. Costive persons frequently complain of an acid generated in their stomach; while others, on account of this acid, are subject to loose and very frequent stools. Vinegar and tart wines are but rarely the cause of this acidity; never, indeed, except when they disagree with the stomach. New wines on the contrary, as well as vegetables of an acescent kind, and particularly long kept and roasted fat meat, have the strongest tendency to produce acidity, the heart-burn, and, at length, obstructions in some constitutions, and diarrhoeas in others. The proper species of food, in such cases, are herbs, carrots, sugar-peas, french-beans, parsley-roots, the scorcenera, artichokes, horse-radish, mustard-leaves, and similar plants, boiled soft in broth, sufficiently salted, and without the addition of fat, or butter. Besides these, only a small quantity of meat ought to be used, and this should be tender; but no fat fish, nor game kept too long, for the purpose of rendering it mellow; and lastly, all kinds of fruit ought to be eaten boiled rather than raw.

4. We should not too much indulge in sleep, which, particularly after dinner, is hurtful to persons whose digestion is languid, and whose evacuations are preternaturally slow. During sleep, all the motions in the system are performed with less vigour, and more tardily:

and, in this respect, to keep awake may be considered as a species of exercise; as the nerves, in that state, are more active, and the circulation of the blood is carried on with greater energy.—Evacuations by stool can be suppressed, by sleeping an improper length of time, for instance, ten or twelve hours instead of seven or eight; and we may prevent these salutary discharges, by sitting down to any inactive employment, previous to the usual inclination to retire to stool.

If it be our wish to preserve health, we ought not only to guard against costiveness, but likewise to prevent, by all proper means, to frequent excretions. Copious evacuations of this kind exsiccate the body, and deprive it of that strength, which is necessary to support its exertions. Persons subject to diarrhœa, cannot be too cautious in the use of watery, saline, and easily fermentable articles of food and drink, and in avoiding violent fits of anger and other passions. On the contrary, they will promote their health, by using provisions of a drying nature, drinking a well-fermented, bitter beer or ale, or, if they can afford it, good old wine:—all of which have the beneficial tendency to promote perspiration, and thus prevent superfluous humidity in the body.

If too copious evacuations proceed from a relaxed state of the intestines, daily exercise is of considerable efficacy; for the fibres of the whole body are thereby invigorated; and, if irritating or peccant humours should be the cause of the complaint, nothing is better cal-

culated to expel them by perspiration, urine, or stool, than spirited and persevering muscular motion, until the body be tolerably fatigued. But, in this case, we must not attempt to remove or suppress this material stimulus by astringent remedies; for, instead of evacuating the noxious matter by the proper emunctories, such medicines will necessarily produce dangerous, and often fatal diseases.

It would be a desirable object, in houses which are not provided with water-closets, that every individual were furnished with his own night-chair; as most of the common places of retirement are literally ventilators, where some parts of the body are exposed to a current of air, which is frequently the cause of disorders, particularly in persons subject to colds, and all other complaints originating from suppressed perspiration; accidents, which may injure still more those, whose lungs are unsound. Men who are troubled with the piles, and, above all, women during the menses, ought to be very cautious in resorting to such places.—In the usual privies, there generally prevails in summer a pestilential fetor; so that it becomes almost impossible to wait for the proper evacuation, both because of the disagreeable smell, and the danger of being infected with disease.

After every stool, there is a slight bearing down of the anus; a circumstance which renders some precaution in the cleaning of it necessary. The substance used for that purpose ought to be previously examined, whether its surface contain any rough and loose particles,

which would be immediately communicated to the anus, and might gradually produce the blind hemorrhoids.—Lastly, all unnatural forcing and straining of costive persons, is not only useless, but may also be attended with dangerous consequences. It is, therefore, more advisable to use all proper means of keeping, if possible, this important excretion in due regularity; and, to attain that desirable end, it is further necessary to abandon all strait garments, especially laced stays, and tight waistbands.

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*Of Urine.*

IN a state of health, this discharge takes place oftener than once in a day. The urine of those who live moderately, and take proper exercise, if examined in the morning after rising, and after having spent a quiet and comfortable night, is thin, clear, of a straw colour or inclining to yellow, with a white, loose, and uniform sediment rising in the middle; it makes no foam, but what immediately vanishes, and has no unusually disagreeable smell. If it correspond to this description, it is a symptom of good digestion, and of the body being free from impurities. The quantity of this evacuation, in healthy persons, depends on their constitution, the season and the weather. It is less in warm than in cold climates, on account of the increased perspiration. In win-

ter, we generally eject more urine than in summer; and this nearly in proportion to the degree of insensible exudation. In spring and autumn, it is probably voided in an equal proportion.

We may judge (not prognosticate) respecting the state of the body, from the appearance of the urine in the morning only; for, during the day, this would be a fallacious criterion, from the nature and quantity of food and drink we consume. The ancients were extremely fond of predicting the different states of health and disease in the human body, from the appearances observed in the urine. Among the moderns, who are better acquainted with the animal economy, these appearances are not implicitly attended to, as they have frequently been found to mislead the observer; yet, the early morning urine, if allowed to stand for an hour or two, exhibits some phenomena, which render it an object worthy the attention of the medical practitioner. Thus, a thin, pale urine, which is voided by the hypochondriac, the hysteric, and persons afflicted with spasms in the abdomen, indicates great weakness, or the approach of cramps, originating from a contraction of the smaller secretory organs. It is likewise of a whitish colour, after taking much weak drink. In debilitated individuals, the urine is foamy, and this froth remains on the top for a considerable time; because it abounds in tough and viscid particles. The health of such persons, however promising in appearance, is by no means permanently established.

The urine is of a red colour, after too little drink, or after drinking spirituous liquors, after violent exercise, profuse perspiration, and after having spent a restless night. It yields a sediment resembling brick-dust, when the stomach is impure, and the tongue white with a yellowish taint, and covered with viscous matter. According to the higher or paler colour of the urine, in an ordinary state of health, the body may be considered as being more or less vigorous. If, after long standing, no sediment be deposited in it, great weakness is indicated: yet the conclusion is more favourable, although the urine be thick and sandy, if a cloud be observed swimming in the middle.

Indeed it is less dangerous to suppress the evacuations by stool, than those by urine; for, if this remain too long in the bladder, it becomes acrid and corrosive. If the inclination to make water is accompanied with a discharge of a few drops only, it is called a *strangury*; if the difficulty of voiding it is attended with pain, a *dysuria*; and, if a total suppression of it takes place, it is then called an *ischuria*. These diseases are frequently the effects of some malt-liquors, or of certain articles of food, particularly vegetables containing much acidity. In the beginning of such painful complaints, relief can be given by fomenting the patient, about the genitals, with flannel-cloths, as hot as he can bear them, by keeping him sufficiently warm, and allowing him plenty of warm, diluent drink.

Although the quantity of the urine to be voided through the day cannot be accurately

ascertained, yet this evacuation ought always to be proportionate to the drink we have taken, and to the greater or less degree of perspiration. If we perceive a deficiency in this discharge, we ought to take moderate exercise, to drink light, thin, and acidulated diluents, and to eat a variety of such herbs and fruits, as possess diuretic virtues: of this nature are, parsley, asparagus, celery, juniperberries, strawberries, cherries, and the like. We should be careful, not to retain the urine too long; a practice which would occasion relaxation and palsy of the bladder, and which might at length produce the gravel or stone.

Many maladies may arise from voiding too small a quantity of urine; hence the necessity of attending to this excretion, from which we may frequently discover the cause of the disease. The relative state of vigour or debility in the individual, the mode of life, more or less drink, dry or damp weather—all produce a difference in the quantity of this evacuation. Robust persons eject less urine than the debilitated: a copious emission of it is always a symptom of a relaxed body, which is not possessed of sufficient energy to expel its noxious particles by transpiration through the cutaneous vessels.

The more exercise we take, the less we lose by the urinary passages; since they are drained by the pores. Cold and moist air checks perspiration, but promotes the excretion by urine. When this canal is suppressed, the bladder sometimes becomes so much distended, that it bursts, as may easily happen to parturient

ent women; and hence arise incurable *fistulae*; or, if the passages be obstructed, the urine retreats into the cellular texture of the whole body, and penetrates even into the cranium. Women, however, are able to retain it longer than men.—Too copious an evacuation of urine constitutes a peculiar disease, known by the name of *diabetes*, which not unfrequently proves fatal to the sufferer, after he has discharged several gallons a day, for a considerable length of time.

Among the rules and cautions for the proper management of this evacuation, it deserves to be remarked, that it is hurtful to make water too often, or before a proper quantity of it be accumulated in the bladder. By such practice, this vessel gradually contracts into a narrower compass than is assigned by nature, and cannot again be easily distended. Too long a retention of urine, on the contrary, preternaturally enlarges the bladder, weakens its muscular power, and may, with the advancement of age, occasion *ischuria* or a total suppression; besides which it promotes the deposition of mucus and sand in the bladder, and inevitably leads to that troublesome and painful complaint, the stone.

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### *Of insensible Perspiration.*

OF all the natural evacuations, none is so important and extensive, none is carried on with less interruption, and none frees the

body from so many impurities, particularly from acrid and thin humours, as insensible perspiration. The health of man chiefly depends on the proper state of this function: the irregularities occurring in it, occasionally produce peevishness of temper, head-ach, disturbed sleep, heaviness in the limbs, &c. ; and, on the contrary, we find ourselves most lively and vigorous, when it is duly and uniformly performed.

A person of a middle stature, and in perfect health, perspires, according to the calculation of some, from three to four pounds weight, according to others, about five pounds, within twenty-four hours. The exudation by the pores is most essential during the night; the noxious particles only being then separated; which, on account of the disturbances we are exposed to through the day, cannot be so well effected, as the circulation of the blood is thereby interrupted, while at night it is comparatively more calm and regular;—besides which, the nocturnal perspiration is more copious, from the greater uniformity of the surrounding atmosphere.

Most of the febrile diseases arise from a suppressed perspiration; as the exuded matter is of an acrid and irritating nature. To transpire beneficially, means, that the impure and pernicious particles only be ejected, in which case the perspiration is invisible and imperceptible. This is so essential a requisite, that without it the health of the individual cannot long subsist. The reciprocal connection between the functions of the stomach, and of perspiration, is

so obvious, that if the latter be checked, the former is immediately affected; and the reverse takes place, if the stomach be disordered.

The more vigorously a person perspires, (it ought to be well remarked, that the question here is not of *sweating*) the more active are the powers of the body, in the regular concoction of the alimentary juices; and the more certain it is, that no fluids will superabound: for the fluids though refined and subtile, far exceed in weight the more compact and solid parts of the system, so that they would oppress the machine like a heavy burden, if not evacuated by the pores of the skin. Most individuals, however, are accustomed to direct their attention only to evacuations of a more gross nature, or such as are more obvious to the senses. But *insensible* perspiration is of greater moment than all the other excretions; and by paying due regard to that function, if it should be accidentally disturbed, we may frequently discover the lurking cause of a distemper, and remove it, before it has materially injured the body.

Yet, even in the most healthy, this perspiration is not at all times, nor at all hours of the day, equally active. It is weaker after a plentiful meal, but as soon as the food is digested, we again perspire with increased energy; for the new chyle being changed into blood, imparts additional efficacy to the vital powers, as well as to the circulation of the blood itself. As we perspire considerably more in summer than in winter, our mode of life, with respect to sleep, as well as to food and drink, ought to be regulated

accordingly. We know from accurate observation, that if we retire to bed immediately after supper, the process of perspiration is checked in a remarkable degree: we also know, that it is highly conducive to health, that this important function of the body be preserved in the most uniform state; hence it necessarily follows, that, after supper, we ought to sit up at least two hours; and to afford this benefit both to the organs of digestion and perspiration, our suppers should not be delayed to the late hours now so absurdly in fashion.

According to the experiments made by different inquirers into the nature of insensible perspiration, this process is most forcibly affected, and sometimes totally suppressed, by the following circumstances:

1. By violent pain, which in a remarkable degree consumes the fluids of the body, or propels them to other parts.

2. By obstructions of the cutaneous vessels, which are frequently occasioned by the use of salves, ointments, and cosmetics.

3. By severe colds, particularly those contracted at night, and during sleep.

4. When nature is employed with other objects. Thus perspiration is weaker during the time of concoction, particularly after using food difficult of digestion. This is likewise the case, when nature endeavours to promote any other species of evacuation, which more engages the attention of the senses; for instance, vomiting, diarrhoeas, considerable hemorrhages, and the like: farther, when the efforts of Nature are too weak; hence the

aged, the debilitated, and poor persons, unable to supply the wants of the body, or to pay due attention to cleanliness, perspire less than others : lastly, the same must happen to individuals of a sedentary life, who neglect the necessary exercise of the body ; and those likewise who wear too tight garments, and improper ligatures about the joints.

Perspiration, on the contrary, is promoted :

1. By stretching or expanding the limbs ; as, by such means, the lungs and muscles acquire an additional impulse, and the fluids circulating too slowly in the smaller vessels, are propelled to the larger veins and arteries, and thus forwarded to the heart ; so that this principal muscle is then impelled to extend and contract its ventricles with greater force, and consequently to quicken the whole circulation of the blood.

2. By the lukewarm bath, which is well calculated to soften the skin, and thus to open the pores for a better perspiration.

3. By moderate bodily exercise.

4. By mild sudorific remedies ;—and for this reason it is extremely proper, in case of a recent cold, to drink two or three cups of tea, especially previous to going to bed.

If perspirable matter collect in drops, it *should* then be called *Sweat*, and is no longer a natural and necessary evacuation ; on the contrary, we find very healthful and robust persons who seldom or never sweat. By means of this exudation, both noxious and useful particles are at the same time ejected from the surface ; the body is enfeebled ; the blood is

rendered impure ; and the secretion of bad humours is prevented by every violent effort of the cutaneous vessels.

If sweating be carried to excess, it is extremely noxious, and may even be productive of consumption. By insensible perspiration, on the contrary, the superfluous particles only are expelled ; because the circulation of the fluids is slower, and more calm and uniform. This important purification of the blood ought never to be checked : if, therefore, we wish to take a bracing exercise, it should by no means be continued till profuse perspiration take place.

Cold then only checks perspiration, when it occasions an unusual stimulus on the skin, and if we too suddenly remove from a warm to a cold atmosphere. Hence the necessity of accustoming ourselves, from early youth, to the vicissitudes of heat and cold, of walking every day in the open air, and of washing the whole body, at least once a week, with lukewarm, or still better, with cold water. By this practice the pores are braced, and inured to undergo the different changes of the weather and seasons, without suffering (as most people now do, upon the slightest occasion) by severe cold and catarrhs.

It is never too late to begin this strengthening process, by frequently washing and rubbing the whole surface of the body with cold water ; for, if cautiously managed at first, it cannot fail to invigorate young persons and adults, as well as the aged.—To sleep on feather-beds occasions a constant vapour-bath at

night, which again destroys the beneficial acquisitions of the day.—To remove from a cold temperature to a still colder one, is not nearly so prejudicial, as to exchange suddenly the air of a warm room, for that of a moist and cold atmosphere. This accounts for the frequent colds caught in summer, even by going from the burning rays of the sun to the cooling shade; and hence too the first cold of autumn is most sensibly felt, because we are then unaccustomed to that impression.

Much also, as has been before observed, depends on the nature and properties of our food and drink, in respect to the state of insensible perspiration. The subtile and rarefied fluids only, not those of a coarse and oily consistence, can pervade the skin. Too many oleaginous, viscous, and crude articles of nourishment, such as fat meat, pastry, boiled mealy dishes, smoked hams, sausages, &c. have a strong tendency to obstruct the free perspiration of the body, and consequently to affect the serenity of the mind.

All the depressing passions and emotions are a powerful check to insensible perspiration; while, on the contrary, those of an exhilarating nature may promote and increase it to such a degree, as sometimes to prove the pre-disposing, though distant cause of consumptions. Moderate daily exercise is eminently calculated to support this function, and to strengthen the whole body. Cleanliness produces a similar effect; for some impurities continually settle on the surface of the body; and these, if not removed in time, clog the pores, and are

so detrimental to health, that they may occasion many obstinate distempers, which might be easily prevented, or at least checked in their progress, by a proper and constant attention to the skin.

Too violent a perspiration indicates great debility of the body, or a laxity of the cutaneous vessels, which may frequently be removed by cold bathing or washing. When persons are troubled with unusual night-sweats, they may receive benefit (if it be not a symptom of hectic fever) by taking, immediately before going to bed, two or three drachms of cream of tartar, in either beer or water. But if this simple remedy, after repeated trials, should prove ineffectual, a professional man ought to be consulted; as long-continued night-sweats may in the end produce great weakness, and even consumption.

In most of the common colds, the popular stimulant remedies, such as heating liquors, and particularly sudorifics, are ill calculated to relieve the complaint. If the patient, at the same time, be troubled with pain in the bowels, head-ach, a foul tongue, &c. a gentle laxative will be of greater service than the diaphoretics. But if the stomach be peculiarly affected, if the tongue be clean and the appetite good; two or three cups of warm diluent drink, a tepid bath of the legs, a moderately warm room and dress, gentle exercise, and friction of the skin with warm cloths, are the most proper and generally effectual means of relief.

As the retention of useless and superfluous matter is hurtful, it is not less detrimental to

health, if substances not ready to be evacuated are ejected from the body.—Of this kind are bleedings from the nose, the mouth, and the vessels of the anus: though these are not natural evacuations, yet they may occasionally be beneficial, as Nature sometimes makes an effort to expel noxious matter in an unusual manner. But these parts or fluids ejected as pernicious, strictly speaking, ought not to exist in the body; and though the evacuation of them be beneficial, it is a symptom of disease. If, therefore, such preternatural discharges take place too violently or frequently, they ought to be checked with judgment and circumspection; and we should endeavour to lead (but not to force) Nature to a more salutary canal, than that she has chosen, either by accident or wanton compulsion.

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*Of the Saliva.*

THE saliva should not be confounded with mucus, or slime; the former is a fluid, not intended by Nature to be evacuated, as it serves the important purpose of mixing and preparing the food for the stomach; hence it ought not to be unnecessarily wasted by frequent spitting; the latter, mucus, may be safely thrown out as burdensome and offensive. The absurd custom of smoking tobacco is extremely prejudicial, as it weakens the organs of digestion, deprives the body of many useful fluids, and

has a direct tendency to emaciation, particularly in young persons, and those of lean and dry fibres. To these it is the more detrimental, that it promotes not only the spitting of saliva, but likewise other evacuations. This plant is possessed of narcotic properties, by which it produces in those who first begin to smoke it, giddiness, cold sweats, vomiting, purging, and, from its stimulus on the salival glands, a copious flow of the saliva.

Frequent and much smoking makes the teeth yellow and black; the clay-pipes are apt to canker the teeth to such a degree as to infect the breath, and produce putrid ulcers in the gums. Delicate persons especially suffer from this nauseous habit; as it has a direct tendency, not only to exsiccate their bodies, by contaminating the fluids, rendering them acrid, and vitiating the digestion and assimilation of food, but likewise to impair the mental faculties. These effects, however, are less to be apprehended from smoking tobacco, if it has become habitual, and is not carried to excess. To persons of a middle age, or those of full growth, particularly the corpulent, the phlegmatic, and such as are subject to catarrhal complaints, it may occasionally be of service, if used with moderation, especially in damp, cold, and hazy weather. Yet such persons ought never to smoke immediately before or after a meal, as the saliva is materially requisite to assist the concoction of food, which is not accomplished till about three or four hours after a meal;—they should smoke slowly; frequently drink small draughts of beer, ale, tea, or any other

diluent liquors, but neither spirits nor wine; and, lastly, they should use a clean pipe with a long tube; for the oil of tobacco, settling on the sides of the pipe, is one of the most acrimonious and hurtful substances, and may thus be accidentally absorbed, and mixed with the fluids of the body.

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*Of the Mucus of the Nose.*

THE secretion of this humour is intended by Nature to protect the olfactory nerves: hence every artificial mean of increasing that secretion is preposterous, unless required by some particular indisposition of the body. The remarks, then, made with respect to the saliva and smoking, are also applicable to the mucus of the nose, and the habit of taking snuff. The question here is not of that catarrhal secretion of viscid slime, which is ejected as useless. Snuff stimulates the mucous membrane of the nose, and, sympathetically, the whole body; by which the mental powers are in a degree affected. If used as a medicine\* only,

\* By the persuasion of some friends, who were anxious to see the farcical performance of an empiric, whose name does not deserve to be recorded here, I this day (September 25th, 1798) joined a party, to witness the pretended effects of a certain *snuff-powder*, together with what he calls his *acromatic belts*, which are at best but a clumsy imitation of *Messmer's Animal Magnetism*; and, as such, have not even the merit of originality. The medicated snuff appears to be an assistant mean contrived by this *Charlatan*, to stupify the heads of his patients, who were generally of the lowest class. The German adventurer stood in need of no external remedies to affect the nerves of the *Parisian fanatics*,

and on occasions that require such a stimulus, it may be productive of some advantage ; but a liquid sternutatory deserves every preference to a powder, which, though at first stimulating and occasioning a flow of viscous matter, in the end always obstructs the nostrils. And if this stimulus be too violent, it may bring on so profuse a discharge of matter from the delicate membrane lining the nose, as to relax and corrode it, and to produce a *polypus*, or a concretion of clotted blood in the nostrils.

In several diseases of the head, eyes, and ears, however, the taking of snuff may occasionally supply the place of an artificial issue ; though an extravagant use of it will most certainly produce a contrary effect ; namely, accumulation of matter in the head, bleeding of the nose, and other complaints. Farther, it would be extremely injudicious to advise the use of snuff to persons of a phthisical constitution, or those afflicted with internal ulcers, and subject to spitting of blood ; as, by the violent sneezing it at first occasions, such individuals might expose themselves to imminent danger.—Public speakers of every kind, as well as teachers of languages, and, in short, all those

while our *London Mountebank* cannot, without some additional stimulus, operate on *Englisch* brains.—All this is characteristic of the vile and despicable plans adopted by quacks ; but, to hear an ignorant pretender to medicine descanting on the virtues existing in his acromatic belts ; maintaining that an universal magnetic spirit pervades them ; that this spirit alone cures all the diseases incident to the human frame, even broken limbs and exfoliations of bones ; and, lastly, to permit an audacious impostor to impeach the honesty of the whole Faculty, before a deluded audience—such outrage loudly calls for the interference of the civil magistrate.

to whom a clear and distinct articulation is of consequence, ought to avoid this habit, which, when carried to excess, is, in this respect, extremely prejudicial. Those, too, who have a regard for cleanliness will not accustom themselves to this hurtful practice. In short, the continual use of snuff gradually vitiates the organs of smell; weakens the faculty of sight, by withdrawing the humours from the eyes; impairs the sense of hearing; renders breathing difficult; depraves the palate; and, if taken too copiously, falls into the stomach, and in a high degree, injures the organs of digestion.

Besides the many bad effects already mentioned, taking snuff may be attended with another consequence, equally dangerous to the alimentary canal. While the nose is continually obstructed, and a free respiration is impeded, the habitual snuff-taker generally breathes through the mouth only; he is always obliged to keep his mouth partly open, and consequently to inspire more frequently and with greater efforts. Thus, by inhaling too much air, he probably lays the foundation of that troublesome flatulency, which is common among those hypochondriacs who habitually take snuff. Hence every person, unless good reasons can be assigned in favour of it, ought to be seriously dissuaded from the use of snuff, as well as of tobacco: and it deserves to be remarked, that both these practices may be safely, and cannot be too suddenly relinquished, as soon as reason prevails over sensual gratifications.

*Of Wax in the Ears.*

IF the ears be seldom, or not properly cleaned, there sometimes accumulates a species of wax, which grows tough and hard, diminishes the acuteness of hearing, obstructs the passage to the ear, and may at length produce total deafness. Copious ear-wax, if it become thin and acrid, may occasion pain, and sometimes a running or suppuration in the ears. Daily washing with cold water strengthens these organs, and is an excellent preservative of the sense of hearing.—If it be apprehended, that insects have made their way into the cavity of the ear, it may be useful to introduce some sweet oil into the orifice, and to repose on that side, the ear of which is the seat of the complaint.

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*Hemorrhages.*

THESE are fluxes of blood, salutary to both sexes, when required and regulated by Nature; but, if suppressed, they may be productive of serious and fatal consequences. The *menfes* are irregular in their appearance and disappearance; being much influenced by climate, and the constitution of the body: the *hemorrhoids*, on the contrary, originate from the mode of living, joined to a particular temperament of the individual. *Bleeding of the nose* arises either from a superabundance of blood,

and its impetuous circulation, or from the bursting of one of the small arteries.—As long as these fluxes continue within proper limits, and do not exhaust the strength of the person subject to them, there is not the least necessity to employ any artificial means of suppressing them; because Nature must not be rudely checked in her beneficent efforts. Nay, even the affections and passions of the mind ought to be duly regulated, particularly by females of an irritable temper, during the recurrence of the menses; for these may, according to circumstances, be either preternaturally increased, or totally suppressed, to the great injury of health.

Lastly, it is extremely imprudent for young women to expose their feet and legs to dangerous colds, in washing the floors of rooms and passages upon their knees, at a time when they ought particularly to guard against the access of damp and cold. Humane and sensible persons would not require their servants to follow this prejudicial practice, by which they are liable to contract the most obstinate disorders: it produces obstructions in the abdomen, swelling of the legs, dropsical complaints, palsy, and even consumptions;—hence the multitude of female servants continually taking refuge in the different hospitals.

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*Of the retention of Milk.*

NOT less hurtful than the suppression of hemorrhages, is the retention of the milk in

the female breast. This, likewise, is generally occasioned by indulging in fits of passion, or by exposing the body, and particularly the lower extremities, to the influence of damp and cold places, or wearing wet clothes, and linen not properly aired. Hence may arise nodules, or small lumps in the breasts, troublesome swellings, especially if the milk be abundant, inflammations accompanied with excruciating pain and violent fever, ulcers in one or more parts of the body at the same time, or scirrhous callosities; and, at length, if neglected or mismanaged, cancer itself. In many instances, a premature stoppage of the milk, in lying-in women, has produced inflammation of the womb, and a severe child-bed fever. Lastly, imprudence with regard to food and drink, dress, air, &c. may occasion the suppression of the milk, as well as of every other evacuation.

## C H A P. V.

*Of the SEXUAL INTERCOURSE ; its physical consequences with respect to the Constitution of the Individual ;—under what circumstances it may be either conducive or hurtful to Health.*

A SUBJECT of such extensive importance, both to our physical and moral welfare, as the consequences resulting from either a too limited or extravagant intercourse between the sexes, deserves the strictest inquiry, and the most serious attention of the philosopher.

The inclination to this intercourse, and the evacuation connected with it, are no less inherent in nature, than other bodily functions. Yet, as the semen is the most subtile and spirituous part of the human frame, and as it serves to the support of the nerves, this evacuation is by no means absolutely necessary ; and it is besides attended with circumstances not common to any other. The emission of semen enfeebles the body more than the loss of twenty times the same quantity of blood, more than violent cathartics, emetics, &c. : hence excesses of this nature produce a debilitating effect on the whole nervous system, on both body and mind.

It is founded on the observations of the ablest physiologists, that the greatest part of this refined fluid is re-absorbed, and mixed with the blood, of which it constitutes the most rarefied

and volatile part; and that it imparts to the body peculiar sprightliness, vivacity, and vigour. These beneficial effects cannot be expected, if the semen be wantonly and improvidently wasted. Besides, the emission of it is accompanied with a peculiar species of tension and convulsion of the whole frame, which is always succeeded by relaxation. For the same reason, even libidinous thoughts, without any loss of semen, are debilitating, though in a less degree, by occasioning a propulsion of the blood to the genitals.

If this evacuation, however, be promoted only in a state of superfluity, and within proper bounds, it is not detrimental to health. Nature, indeed, spontaneously effects it, in the most healthy individuals, during sleep; and, as long as we observe no difference in bodily and mental energy after such losses, there is no danger to be apprehended from them. It is well established, and attested by the experience of eminent physicians, that in certain indispositions, both of men and women, this is the only permanent remedy that can be advised, to restore their languishing health. It is not uncommon to find, that melancholy, incurable by any other means, has been happily removed, in persons of both sexes, by exchanging a single state for that of wedlock.

There are a variety of circumstances, by which either the utility or the insalubrity of the sexual intercourse is, in general, to be determined.—It is conducive to the well-being of the individual, if Nature (not an extrava-

gant or disordered imagination) induces us to satisfy this inclination, especially under the following conditions :

1. In young persons, that is, adults, or those of a middle age ; as, from the flexibility of their vessels, the strength of their muscles, and the abundance of their vital spirits, they can the better sustain the loss occasioned by this indulgence.

2. In robust persons, who lose no more than is almost immediately replaced.

3. In sprightly individuals, and such as are particularly addicted to pleasure ; for, the stronger the natural desire, the safer is its gratification.

4. In persons who are accustomed to it ;—for Nature pursues a different path, accordingly as she is habituated to the re-absorption, or to the evacuation of this fluid.

5. With a beloved object ; as the power animating the nerves and muscular fibres is in proportion to the pleasure received.

6. After a sound sleep ; because then the body is more energetic ; is provided with a new stock of vital spirits ; and the fluids are duly prepared :—hence the early morning appears to be designed by Nature for the exercise of this function ; as the body is then most vigorous ; and, being unemployed in any other pursuit, its natural propensity to this is the greater : besides, at this time, a few hours sleep can be readily obtained, by which the expended powers are, in a great measure, renovated.

7. With an empty stomach ; for the office of digestion, so material to the restoration of bodily strength, is then uninterrupted. Lastly,

8. In the vernal months ; as Nature, at this season in particular, incites all the lower animals to sexual intercourse ; as we are then most vigorous and sprightly ; and as the spring is not only the safest, but likewise the best time, with respect to the consequences resulting from that intercourse. It is well ascertained by experience, that children begotten in spring are of more solid fibres, and consequently more vigorous and robust, than those generated in the heat of summer, or cold of winter.

It may be collected from the following circumstances, whether or not the gratification of the sexual impulse has been conducive to the well-being of the body ; namely, if it be not succeeded by a peculiar lassitude ; if the body do not feel heavy, and the mind averse to reflection : all which are favourable symptoms, indicating that the various powers have sustained no essential loss, and that superfluous matter only has been evacuated.

Farther, the healthy appearance of the urine, in this case, as well as cheerfulness and vivacity of mind, also prove a proper coction of the fluids, and sufficiently evince an unimpaired state of the animal functions, a due perspiration, and a free circulation of the blood.

There are, however, many cases in which this gratification is the more detrimental to health, when it has been immoderate, and without the impulse of Nature, but particularly in the following situations :

1. In all debilitated persons ; as they do not possess sufficient vital spirits ; and their vigour, after this enervating emission, is consequently much exhausted. Their digestion necessarily suffers, perspiration is checked, and the body becomes languid and heavy.

2. In the aged, whose vital heat is diminished, whose frame is enfeebled by the most moderate enjoyment, and whose strength, already reduced, suffers a still greater diminution, from every loss, that is accompanied with a violent convulsion of the whole body.

3. In persons not arrived at the age of maturity :—by an early intercourse with the other sex, they become enervated and emaciated, and inevitably shorten their lives.

4. In dry, choleric, and thin persons : these, even at a mature age, should seldom indulge in this passion, as their bodies are already in want of moisture and pliability, both of which are much diminished by the sexual intercourse, while the bile is violently agitated, to the great injury of the whole animal frame.—Lean persons generally are of a hot temperament ; and the more heat there is in the body, the greater will be the subsequent dryness. Hence, likewise, to persons in a state of intoxication, this intercourse is extremely pernicious ; because in such a state the increased circulation of the blood towards the head, may be attended with dangerous consequences, such as bursting of blood-vessels, apoplexy, &c. ;—the plethoric are particularly exposed to these dangers.

5. Immediately after meals; as the powers requisite to the digestion of food are thus diverted, consequently the aliment remains too long unassimilated, and becomes burdensome to the stomach.

6. After violent exercise; in which case it is still more hurtful than in the preceding, where muscular strength was not consumed, but only required to the aid of another function. After bodily fatigue, on the contrary, the necessary energy is in a manner exhausted, so that every additional exertion of the body must be peculiarly injurious.

7. In the heat of summer, it is less to be indulged in than in spring and autumn; because the process of concoction and assimilation is effected less vigorously in summer than in the other seasons, and consequently the losses sustained are not so easily recovered. For a similar reason, the sexual commerce is more debilitating, and the capacity for it sooner extinguished, in hot than in temperate climates. The same remark is applicable to every warm temperature combined with moisture, which is extremely apt to debilitate the solid parts. Hence hatters, dyers, bakers, brewers, and all those exposed to steam, generally have relaxed fibres.

8. In a posture of body, which requires great muscular exertion, it is comparatively more enfeebling; as, in this case, various powers are exhausted at once.

It is an unfavourable symptom, if the rest after this intercourse be uneasy; which plainly indicates, that more has been lost, than

could be repaired by sleep: but if, at the same time, it be productive of relaxation, so as to affect the insensible perspiration, it is a still stronger proof that it has been detrimental to the constitution.—There are, as has been before observed, two principal causes, from which the indulgence in this passion has a debilitating effect on the constitution, particularly in men:—1. by the convulsive motion of the whole frame, combined with the impassioned ecstasy of the mind; and, 2. by the loss of this essential fluid, more than by any other circumstance. But, if it be not emitted, the subsequent relaxation is inconsiderable, and not much increased even on the following day, if the semen should be ejected, upon a repetition of the intercourse.—It certainly is ill-founded, that swellings of the scrotum may arise from a stagnation of the seminal fluid: such swellings, if they really take place, are not attended with any danger; as experience informs us, that they are either again absorbed, to the benefit of the body, or if the accumulation of the semen become too copious, it is spontaneously evacuated by Nature.

The relaxation of those who keep within the bounds of moderation, in this respect, does not continue long; one hour's sleep is generally sufficient to restore their energy. Such temperance is highly beneficial to the whole body, while it serves to animate all its powers, and to promote insensible perspiration, as well as the circulation of the blood. The semen can be emitted without injuring the body, if Nature alone demand it, that is,

when the reservoirs are full, and a material stimulus occasions it, without the active concurrence of imagination.

As it is principally this fluid which affords vivacity, muscular strength, and energy to the animal machine, the frequent loss of it cannot but weaken the nerves, the stomach, the intestines, the eyes, the heart, the brain—in short, the whole body, together with the mental faculties; it in a manner destroys the ardour for every thing great and beautiful, and surrenders the voluptuary, in the prime of his life, to all the terrors and infirmities of a premature old age, from which even the conjugal state cannot save him. The most certain consequence of excess in venery is hypochondriasis, frequently accompanied with incurable melancholy: the unhappy victim endeavours to exhilarate himself by a repetition of these convulsive exertions of his vital spirits, and thus precipitates himself into still greater misery.—Many of the diseases of the eyes originate from such intemperance; and these votaries of pleasure are not unfrequently attacked with *tabes dorsalis*, or consumption of the back, which generally proves fatal.

Here likewise, every individual ought to pay proper regard to his constitution. Some are provided by Nature with an uncommon portion of bodily vigour, while others are but sparingly supplied: the former, therefore, overcome slight transgressions of this kind, without much danger, while the latter cannot commit excesses with impunity. The natural instinct ought always to be consulted, in what-

ever relates to this function; but it should not, as is frequently the case, be confounded with the artificial stimulus. Hypochondriacs, indeed, as well as those who make use of many nourishing species of food and drink, are sometimes stimulated merely by a certain acrimony in the abdominal vessels; such a stimulus, however, is totally unconnected with the impulse of Nature.

Frequent and copious emissions, during sleep, are productive of equally bad effects; they bring on the frailties of age at an early period of life, and soon prepare the exhausted sufferer for the grave. But infinitely more dangerous is the secret vice of Onanism, which debilitates the body more than any other species of debauchery. By this execrable practice, a greater quantity of semen is evacuated, than by the natural commerce between the sexes; the vital spirits cannot operate so uniformly, as to counterbalance the convulsive effects which agitate the whole animal frame; and the circumstances, which render this hateful vice so destructive to both sexes, particularly at a tender age, are, that the opportunities of committing it are more frequent than those of the sexual intercourse, and that it but too often becomes habitual.

The imagination which, by the natural union of the sexes, is in a certain degree gratified, becomes with every repetition of Onanism more disordered, and is continually filled with libidinous images: and although the frequent loss of semen, is, for a considerable time, supplied, by a fluid of an inferior quality, yet,

even by this imperfect supply, the body is drained of the spirituous and most valuable parts of its fluids.

All kinds of evacuation, when immoderate, are prejudicial to health; but that of the women is particularly so; for it is an established fact, that every stimulus increases the secretion of humours, and that Nature is necessarily forced to make irregular efforts, to restore the losses sustained, in the most speedy, though in its consequences, the most ruinous manner.

As most female animals refuse to receive the males, while they are in a state of pregnancy, the connection with pregnant women appears to be physically improper. Although the dangerous consequences thence arising, both to the mother and child, may have been exaggerated, yet the embrace of women far advanced in pregnancy is certainly not conformable to the laws of Nature, and ought not to be considered as a matter of indifference. Such females as wantonly submit to it may readily miscarry; for the fetus is thus much compressed, and an additional flow of humours is thereby occasioned. If, however, in married life, this intercourse, notwithstanding its impropriety, should be indulged in, it ought to be practised with precaution, and not too frequently; as such excesses may not only enfeeble the mother, but likewise be attended with effects very hurtful to the child. Nay, it is asserted by some authors, that the frequent cases of *hydrocephalus*, or dropsy in the head, are to be ascribed chiefly to this practice

among parents ;—a conclusion which, though hypothetical, is not unreasonable.

A connection with females suckling children, is not less improper ; as the milk is thereby vitiated, and the health of the infant affected.—Nor is it justifiable to gratify this passion during the menses ; which may be either thus suddenly suppressed, or, by the increased access of the fluids, may terminate in an hemorrhage of the womb : besides which, the sexual intercourse during this period, as well as for some days immediately preceding, cannot answer the purpose of generation ; because the ovum of the female, being but slightly attached, is again separated by the periodical discharge. Hence the congress of the sexes is most generally crowned with fertility, after the catemenia have ceased ; for then the female is in the most proper state for fecundation, because that the ovum has sufficient time to be consolidated, before the next menstrual evacuation.

Not with a view to satisfy idle curiosity, but for the information of the judicious reader, I shall give some particulars, relative to the nature of the feminal fluid. The semen in men, as it is emitted, consists of various compound humours. Besides the real semen prepared in the scrotum, and deposited in the proper vesicles, it is mixed with the peculiar moisture contained in the latter, with the liquor secreted by the prostate gland, and probably also with some mucus or phlegm from the urethra. It is of a greyish colour, inclining to white, is glutinous and tough,

has a very volatile, penetrating smell, and is of considerable specific gravity. In water, the thicker part, which in all probability is the pure semen, sinks to the bottom; another part appears in fine threads, and forms a thin pellicle on the surface of the water. In persons not arrived at the age of maturity, and likewise in enervated adults, it is of a thin and ferous consistence.

In the fresh semen of those who are capable of procreating, we find a great number of animalculæ, which can be perceived only by means of the most powerful microscopes: these do not appear to be mere vesicles filled with air; as they are formed irregularly, one extremity being somewhat spherical, the other smaller and rather pointed; their supposed use will be mentioned towards the conclusion of this chapter, when treating on the different theories of generation.

As part of the small artery, through which the blood is propelled into both testicles, runs immediately under the skin, and consequently the blood is conducted from a warmer to a much colder place; as the seminal tubes in the testicles are very delicate and long, and take throughout a serpentine course—the canal traversing the upper testicle (*epididymis*) being alone thirty feet long and upwards; as, lastly, the narrow seminal tubes pass over into the wider canal of the epididymis, and this again into the still wider seminal passage: it is obvious, that the secretion and evacuation of the semen not only takes place very slowly, but also in very small quantities.

Nature seems to employ a considerable time in preparing and perfecting a fluid, which is indispensably necessary to the propagation of the species. The quantity, therefore, which is emitted in every intercourse between the sexes, and which is computed to be equal to half an ounce weight,\* can be but gradually replaced. Hence it happens, that even men of strong constitutions cannot indulge in venery more than once in three or four days, for any considerable time, without impairing their health, and diminishing their strength. These remarks, however, apply chiefly, and almost exclusively, to the male sex; for, with regard to women, it is an erroneous notion, that they secrete any semen;—what has formerly been considered as such, consists merely of a pituitous liquor, proceeding from the womb and the vagina.

To return from this short digression, I shall farther observe, that, where it may be otherwise proper, it is an excellent and healthful rule, (however ludicrous it may appear to the sensualist) to gratify the inclination for the sexual commerce only at regular stated periods, so that nature may become habituated to it, without making unusual and hurtful efforts. This might be attended with the additional advantage, that persons, in a conjugal state, would not be so apt to commit excesses, which, in the end, are productive of satiety

\* This assertion, as well as that immediately following, rest upon the authority of Prof. LONER, of Jena; and I here refer to his excellent work: "*Elements of Medical Anthropology, &c.*" (in German,) p. 417. second edition 8vo. Weimar, 1793.

and indifference towards the object of former affection, and which are undoubtedly the frequent cause of a feeble and degenerate offspring.

No irregularities whatever are more certainly punished than those of venery; and, though the consequences should not immediately take place, they unavoidably follow, and generally at a time when they are most severely felt; sometimes in the organs of generation alone, and sometimes over the whole body. Even the connection with the most beloved object, the possession of whom has been long and anxiously wished for, does not exempt the voluptuary from these prejudicial effects, if the bounds of moderation be exceeded: the imagination at length becomes disordered; the head is filled with libidinous images; and the predominating idea of sensual enjoyment excludes the reflections of reason. Thus Nature becomes in a manner forced to conduct the fluids to the parts of generation, so that such unfortunate persons cannot relinquish this destructive habit; they are troubled with involuntary emissions of the semen, which are extremely debilitating, and which either deprive them entirely of the faculty of procreating, or destroy the elasticity of the parts, and exhaust the semen to such a degree, as to produce only feeble and enervated children.

In those who lead a life of debauchery, spasmodic affections, and even ruptures, are not uncommon: women are afflicted with the *fluor albus*, violent fluxes of the menses, bearing down of the vagina, and innumerable oth-

er maladies of a disagreeable nature. These destructive effects on the body are at first manifested by a general relaxation of the solids: the whole nervous system is reduced to a state of extreme debility, which is seldom, if ever, removed by the most rigorous adherence to diet, and the most apposite medical remedies. Hence necessarily arise, as has been already observed, the almost infinite varieties of hypochondriasis, and imbecility, to so alarming a degree, that persons of this description cannot direct their attention to one object, for a quarter of an hour together: their spirits are exhausted; their memory as well as their judgment are greatly impaired; and in short, all the faculties of mind, all its serenity and tranquillity, are so much affected, that they scarcely enjoy one happy moment.

The external senses do not suffer less upon these occasions: the eyes, especially, become weaker, imaginary figures are continually floating before them, and frequently the power of vision is entirely destroyed.—The stomach also, on account of its intimate connection with the nerves, in a great measure partakes of these infirmities: whence arise diseases of various degrees of malignity;—the lungs too become disordered; hence the many lingering and incurable consumptions, which destroy such numbers in the prime of life. If, however, they survive the baneful effects of their intemperance, their bodies become bent from absolute weakness, their gait sluggish and tottering, and the residue of their days is marked with painful debility.

Young persons, as well as those whose employments require much muscular exertion, are in an uncommon degree weakened by frequent debauches. Indeed, the sexual intercourse, even within the limits of moderation, is more hurtful to some individuals than to others. Thus, a person born of strong and healthy parents is not nearly so much hurt by occasional extravagance as another, whose parents were weak and enervated, or who is himself threatened with consumption; and, lastly, those also ought to be abstemious in this respect, who feel an unusual lassitude and weakness, after the least indulgence.

There are people who, from ignorance, have long been in the habit of committing excesses, and who wish at once to reform their mode of life; the consequence of this sudden change generally is an increased debility; and they become very liable to fits of the gout, hysteric and hypochondriacal complaints. As they are sensible of their growing weakness, they expect to relieve themselves by strengthening remedies, which render their situation still worse, being apt to occasion involuntary emissions of semen in the night, to relax and destroy the stomach, and at length to produce an irritating acrimony in the intestines, which is the frequent cause of such emissions. Even the mild corroborants cannot be used here with any hopes of success; as the body is overloaded with pituitous phlegm, from which readily arise jaundice and dropsy. Hence it is more advisable, and, at least in a physical respect,

more salutary, to return from such irregularities by gradual steps, than by a too sudden and dangerous change.

It is further remarkable, that most persons, especially in the higher ranks, do not marry at a proper period of life ; partly from caprice and family-considerations ; partly on account of the difficulty to maintain a family, in the present more expensive mode of living ; and partly from other causes which are best known to bachelors. Thus they enter into the conjugal state, when their frame is enervated by dissipation of every kind ; but such debauchees ought not to be permitted by the State to encumber the world with a degenerate offspring.

On the contrary, to be married too early, and before a person has attained the age of maturity, is likewise improper and hurtful. Every candidate for matrimony should endeavour to obtain the most accurate intelligence, whether the object of his affection be qualified for the various duties of that state, or whether she be subject to phthysical, hysterical, and nervous complaints, all of which ought to be guarded against ; as, besides the misfortune of being united to a valetudinary partner, healthy women only will produce sound and vigorous children.

Those who do not marry for the sake of wealth and family-interest, should choose a well formed and agreeable partner, as deformed mothers seldom bring forth handsome children. The natural disposition of a woman likewise, deserves to be investigated, previous to the union ; for it is the opinion of accurate

observers, that children most generally inherit the propensities and passions of the mother. There ought to be no remarkable difference between the age of the married couple; and the most proper time in life for matrimony, in our climate in general, appears to be that between the age of eighteen and twenty in the female, and from twenty-two to twenty-four in the male sex.

Lastly, women who are hump-backed, or who have had the rickets in their infancy, ought not to enter the state of wedlock; the former, in particular, (according to the rules of sound state-policy) should by no means be allowed to marry, until examined by professional persons, whether there be any impediment to child-bearing from the preternatural structure of the *pelvis*:—this frequently renders the Cæsarean operation necessary; or the artificial separation of the pelvis is connected with imminent danger of life. For the same reason, even elderly women should not be encouraged to engage in matrimony, as they either remain barren, or, if not, they experience very difficult and painful parturition.

In some rare instances, however, too great abstinence may be the cause of serious distempers. A total retention of the semen is not indeed always hurtful; but it may be so, occasionally, to persons naturally lascivious, and to those of a corpulent habit. These are generally provided with an abundance of the feminal fluid, which, if too long retained in the body, causes involuntary evacuations, plethora, swellings, pain and inflammation of the semi-

nal vessels, the inspissation and at length corruption of the stagnating semen—and sometimes priapisms, convulsions, melancholy, and at length furious lewdness.

The female sex are not less liable to diseases from inevitable abstinence: loss of strength, *chlorosis*, *fluor albus*, hysterics, and even *furor uterinus*, may sometimes be the consequence. Yet, I cannot upon this occasion omit to remark, that these effects seldom, if ever, take place in those who live regularly, and do not encourage libidinous ideas; and that both males and females would undoubtedly derive greater benefit from total continence, till marriage, than by an unlimited indulgence in venery: in the former case, they would not only in a great measure contribute to their vigour of body and mind, but also to the prolongation of life.—Young women of an habitually pale colour, may be justly suspected of being troubled with the *fluor albus*;—or of having an ardent desire to change their state.

To repair the injuries brought on by an excessive indulgence in the sexual commerce, such means ought to be employed, as are calculated to remove the irregularities which have taken place in the functions of digestion and perspiration, and to give new energy to the solid parts. With this intention, the quantity of food is not of so much consequence as its quality; hence the diet should be nourishing, of easy digestion, and have a tendency to promote insensible perspiration: in all states of debility, a light and spare diet is the most suitable to restore strength, without exerting too much the

digestive organs. Rich nourishment, therefore, as well as tough, flatulent, and crude victuals, or those which are liable to ferment in the stomach, would, in such cases, be extremely pernicious.—But, above all, a rigid degree of abstinence from the intercourse which has occasioned the weakness, cannot be too seriously recommended; as this alone is generally sufficient to restore muscular vigour, especially where youth and soundness of constitution are in favour of the individual.

Although we are possessed of no specifics, strictly deserving the appellation of *aphrodisiacs*, yet there certainly are means, which tend to promote the desire, as well as the capacity, of carrying on the sexual intercourse: these are either such as contribute to increase the femal fluid, or stimulate the genital organs. Of the former kind are those, which afford a rich chyle and salubrious blood, which conduct this fluid more abundantly to the parts of generation, and are on that account mildly diuretic; for instance, milk, eggs, tender and nourishing meat, herbs and roots of a mild, spicy nature, and such as promote the secretion of urine, moderate bodily exercise, particularly on horse-back, &c. Merely stimulating remedies, however, should not be employed without great precaution, especially by the infirm, and those beyond a certain age; for the emission of semen, in these, is generally attended with debility and disgust: while in young and robust persons there is no necessity to increase the secretion of that fluid by artificial means.

There are likewise remedies of an opposite tendency, more effectually answering the purpose of moderating, or rather checking a too violent propensity to venery, than those before stated, with a view to promote it. In the present state of society, and particularly among maritime nations, where a great proportion of men and women are obliged to lead a single life, the means conducive to diminish this passion, deserves every attention. Of this nature are :

1. A laborious and rigid life, much bodily exercise, little sleep, and a spare diet ; so that the fluids may be more easily conducted to other parts, and that they may not be produced in a greater quantity, than is requisite to the support of the body. For the same reason, it is advisable, as soon as the desire of committing excesses rises to any height, immediately to resort to some serious avocation, to make use of less nutritious food and drink, to avoid all dishes peculiarly stimulating to the palate, and to abstain from the use of wine, and other spirituous liquors.

2. To shun every species of excitement ; such as intimacy with the other sex, amorous conversations, libidinous narratives, seductive books, pictures, &c.

3. A cool regimen in every respect :—hence Plato and Aristotle recommended the custom of going barefoot, as a means of checking the stimulus to carnal desire ; so that this indecorous practice was considered by the ancients as a symbol of chastity. The cold bath was likewise suggested for the same purpose ;

Others again, among whom may be reckoned Pliny and Galen, advised to wear thin sheets of lead on the calves of the legs, and near the kidneys.—With the same intention, and probably with better effect, may be used the cooling species of nourishment, such as lettuce, water-purflane, cucumbers, &c.—for common drink, mere water; and, if the impulse of passion should increase, a small quantity of nitre, vinegar, or vitriolic acid, may occasionally be added to the water, to render it more cooling.—Yet all these and similar remedies are of little or no advantage to the habitual voluptuary, especially if subject to hypochondriasis. The exciting cause in such persons not unfrequently proceeds from a diseased abdomen, which, as has been before observed, may be so much obstructed, that all other remedies are in vain, until the material stimulus of such obstructions be removed.—Lastly,

4. The various *extenuants*, such as spices of all kinds, and the smoking of tobacco, violent exercise, &c. are equally improper; as these would inevitably impair the health of persons naturally lean, sanguine, and choleric; while in cold and phlegmatic temperaments, they would rather tend to increase than to abate the stimulus.

Having now, as far as was consistent with the plan of this work, investigated both the beneficial and detrimental consequences of the sexual intercourse, I propose to conclude this subject with a concise view of the principal *theories of generation*, which have been offered by the ablest physiologists, and which I have

extracted from the afore-mentioned work of Dr. Loder.

“ The origin of the first germ of the embryo, (says the learned Professor) and the manner of its formation, are so obscure, that of all the conjectures made by the most attentive and ingenious observers, none has yet obtained general credit, or arrived at any degree of certainty. The sexual function appears to belong to those secrets of Nature, to the developement of which the powers of the human understanding are altogether inadequate. Yet it is not undeserving the attention of a reflecting mind, to become acquainted with the diversified hypotheses that have prevailed on this subject, and particularly those which have the greatest share of probability in their favour.

“ Some of the ancient naturalists have searched for the first germ of the embryo, not within the bodies of the parents, but absolutely in external objects; while they maintained, that it is introduced from without, either by the air, or particular articles of nourishment; and, if it happen to meet with a body qualified to effect its formation, it then receives life, and grows; but, in the contrary case, it passes away unchanged. This whimsical conjecture is undeservedly transmitted to our times, by the name of *panspermia*;—it is unworthy of refutation, as it is unfounded, and totally inconsistent with experience.

“ By another hypothesis (*generatio æquivoca*) it was asserted, that a variety of insects, and even of the smaller animals, may originate

from extraneous substances, by mere fermentation and putrefaction, without previous generation, or any intercourse of males and females.—Thus maggots were said to arise from putrifying meat, and in wounds; fleas to grow in urine and feces, &c. But by more accurate observations we have learnt, that such vermin are only generated in putrescible bodies, when the eggs of those insects, which feed upon putrid substances, have been previously deposited in them.—Yet there is a certain kind of minute animals, which seem to receive life merely from the vivifying powers of Nature, being bred, by infusion, in substances foreign to their species; and to these perhaps the preceding theory is so far applicable, as their origin is involved in obscurity.

“Other naturalists have ascribed the first germ of the embryo exclusively to the semen of the male. Hence arose the singular opinion, that the small embryo, with all its parts, is already deposited visibly in the semen; or that it may be produced from this humour by mere fermentation, or chemical process, without the co-operation of the animal body. Hence also the hypothesis formerly maintained by several eminent writers, that the animalculæ of the semen are to be considered as germs of embryos; that, with every intercourse between the sexes, an innumerable quantity of these is introduced into the female parts of generation; that only one or two of such animalculæ arrive at the ovaria, from thence return to the womb, and progressively grow there; but that all the

others necessarily perish.\* — This bold conjecture is not only incompatible with the wisdom of the Creator, but, besides other strong arguments against it, in a manner refutes itself by this circumstance, that in very different creatures, for instance, in men and in asses, there are found animalculæ exactly similar, while in animals of the greatest resemblance in other respects, we meet with animalculæ altogether different. For this reason, they ought to be considered as little creatures inherent in the animal body, and which indeed may form an essential part of a fruitful semen, but the use of which is yet unknown.

“ Another sect of natural philosophers, who attributed to both sexes an equal share in the procreating function, maintained, that the germ of the embryo originates in a mixture of the male and female semen, the latter of which proceeds from the ovaria. Among later naturalists, the celebrated BUFFON was the principal supporter of this opinion. He endeavoured to establish this hypothetical notion, by conjoining with it the idea of certain *internal forms*, which were requisite to the formation of the parts of the body; in consequence of which he maintained, that the sex of the em-

\* *Ludwig von Hammen*, a young man, born at Dantzic, during the time of his studying medicine at Leyden, and in the course of his microscopical pursuits, discovered, in the month of August, 1677, in a drop of the semen of a cock recently dissected, a kind of ocean, in which swam thousands of little, lively, active animals. The same phenomenon was also observed in the mature semen of other male animals; and in these animalculæ were immediately thought to be seen the germs of subsequent perfect animals. By this discovery, a key was supposed to be found, which would unlock the whole mystery of generation.

bryo is determined by the circumstance of its consisting of a greater quantity of male or female semen.—But, as the supposed female semen does not proceed from the ovaria, and as the ovaria are not connected with the womb by any tubes, but merely by solid ligaments, it follows that women seern no semen, and what is improperly so called, is only, as I have already observed, a pituitous liquor secreted from the uterus and the vagina. It is farther inconceivable, that the embryo could be endowed with corporeal parts, different from those of father and mother, if it originated merely in the mixture of the seminal fluids of both, and if these should comprehend all the individual parts of the body. Besides, the fanciful internal forms of Buffon cannot be proved by any argument or observation.

“ Again, others have ascribed the germ of the embryo to the mother alone, while they granted to the male semen no other power than that of vivification. These philosophers, among whom we find HALLER and BONNET, seriously asserted, that the whole body of the embryo lies already prepared in the ovary of the mother, so that it requires only to be developed, and that the male semen communicates merely the first impulse to this development. They certainly went too far in this assertion; yet it is highly probable, that the crude matter already exists in the ovary, and that it is first animated by the semen of the male, and thus qualified for its gradual formation.

“Respecting the manner in which the embryo is formed, there prevail two principal theories, namely, that of *evolution*,\* and that

\* “According to this theory, (says the facetious *Prof. BLUMENBACH, of Göttingen,*) we, and indeed all the children of Adam, were at one time, *ipso facto*, pent up in the two ovaria of our common mother, Eve. There we lay, as it were, asleep; and, though astonishingly little creatures, yet completely organized bodies, and perfect miniatures of the forms we have since attained; for, says HALLER, “*All our viscera, and the bones themselves were then already formed, although in a kind of fluid state.*” That which we call impregnation, is nothing else than the action of awakening the germ from its lethargic state, by means of the male semen, which stimulates the little creature’s heart to the first pulsation; and so on.

“The same kind of idea has lately induced a very celebrated naturalist of Geneva, and a warm advocate of this theory, to plan out for us a history of organized bodies previous to the state of impregnation; from which we learn, 1. that we are all much older than we suppose ourselves to be: 2. that all mankind are exactly of the same age, the great-grandfather being not a second older than the youngest of his great-grandchildren; 3. that this respectable age of ours may be about six thousand years. The same natural historian also entirely agrees in opinion with Bazin; that since this charming long series of years, when we were all packed together, along with Cain and Abel, and the other two hundred thousand millions of men, which, according to the best calculations, have since that period gone—*quo pius Æneas, quo Tullus dives, et Ancus*; in a word, since the first creation, during which time we have been in a kind of lethargic sleep, though not entirely motionless; that during the whole fifty-seven centuries, I say, previous to our being awakened by the above-mentioned stimulus, we were, according to Bazin’s opinion, always growing by imperceptible degrees; for instance, we were most probably rather a little bigger at the time we lay beside Cain’s nieces, than when all their uncles and aunts were of the party, as it is very natural to suppose, that we must then have been considerably more straitened for room. In this manner, our apartment became gradually more easy and commodious, in proportion as our forefathers were evolved; and we kept continually expanding ourselves more and more, until the succession of evolution at last came to our turn! !”

Such is the ludicrous account of a theory which, though leading to the most extravagant and romantic conclusions, was supported by the great Baron HALLER, and the late Italian philosopher, SPALLANZANI. These eminent men have endeavoured to support the doctrine of the pre-existence of complete organized *moleculæ* in the ovaria of females before impregnation, by many experiments and observations, which at first sight, appeared to be

of *gradual formation* (*epigenesis*.) Agreeably to the former, it was conjectured, that all organic bodies, which have already originated, or which may at any future time originate from one another, have been combined, or inclosed one within another as germs, from the first creation of the world; and that they required only a gradual evolution, to bring them to a state of perfection. The supporters of this theory alleged the instance of the vine-fretter, which evidently contains in itself several generations, as likewise that of the butterfly, which lies already formed in its case, and various other plausible examples; but, above all, they endeavoured to explain their hypothesis by the origin of the chicken in the egg;\*

so far conclusive, that they obtained full and general credit for more than thirty years. Prof. Blumenbach himself not only believed in the truth of this absurd doctrine, but defended it in many of his earlier writings. At length, however, the success he unexpectedly met with, in an experiment with a species of a green-armed polypus (*conferva fontinalis*;) and its astonishingly rapid powers of reproduction, induced this candid philosopher to acknowledge his former errors, and to publish an '*Essay on Generation*,' in which he boldly attacks all former theories; attempts to refute them, partly by argument, partly by his peculiarly humorous mode of exposing the inconsistencies they lead to; and, at the same time, proposes a new hypothesis, the substance of which I shall insert in a subsequent page, when the theory of *gradual formation* will be considered.

\* To such readers as are desirous to become more fully acquainted with the particulars of this extraordinary conjecture, it may be useful to illustrate it with the following account, extracted from the Essay before quoted, from the pen of Prof. Blumenbach.

"Mr. Paul," says he, "a natural historian of great reputation, has (in his preface to the 8th vol. of the *Collection Academique*, p. 22, & seq.) objected to Haller's demonstration, that, allowing the membranes of the yolk with its invisible vessels to have pre-existed in the hen, yet it is possible that the embryo is only formed during incubation, and that its blood-vessels afterwards unite with

which, however, is a direct demonstration of the contrary. The objections which have been started against this opinion, concerning the

the blood-vessels of the membranes of the yolk, and thus form an *anastomosis*.

“Baron von Haller immediately declared loudly against this objection, and denied it, as a thing altogether *impossible*, that the tender vessels of the microscopic embryo should be capable of anastomosing with the large blood-vessels of the giant yolk.

“But what is rather singular is, that this very ingenious and meritorious author, who denies the possibility of such an anastomosis, supposes without any hesitation, and in the same work, when explaining human conception, that the very minute germ, as soon as it has arrived at the cavity of the uterus, forms an adhesion with it, by means of the placenta;—And how?—Just in the same way that he denies it to the embryo of the hen; that is to say, by an anastomosis taking place between the microscopic and tender branches of the umbilical vessels, and the giant ones of the maternal uterus.

“The modern advocates for the theory of evolution have taken this observation of the yolk of the egg, as the prop of their hypothesis.—Long before this, however, the spawn of the frog had been employed for the same purpose.

“Nearly a century indeed before that period, SWAMMERDAM announced the wonderful discovery, that the black points in the spawn of a frog were so many perfectly-formed little frogs, and that they pre-existed in the ovaria, although not discoverable by the naked eye.

“The good man seemed to have had a *presentiment* of the uncertainty and instability of all vain worldly honours; and he therefore, as is well known, soon after betook himself to a more solid enjoyment, in which Mademoiselle Bourignon participated. And, indeed, it happened as he appears to have foreseen; for the ungrateful world now ascribe the merits of that discovery to the celebrated Abbe SPALLANZANI, who has maintained it in several of his writings, but more particularly in the second volume of his “*Dissertazioni di fisica animale e vegetabile*.” Tom. xi. in Modena, 1780, 8vo.

“He calls the little black points of the fecundated spawn of frogs, tadpoles, or young frogs; and, as this little black point exactly resembles the same in the unfecundated spawn, he reasons agreeably to his logic, that the tadpoles must have existed in the mother.—I do not know what would be thought of a chemist who should assert that the *Arbor Diana* pre-existed in a mass of amalgam of silver, because, when a weak solution of silver was poured on it, a little tree seemed to spring out of it.—One ought to be ashamed of wasting much time in the refutation of an assertion, of the falsity of which any unprejudiced person, who is not alto-

minuteness of the germs, and the production of monsters, or bodies of preternatural shape, may be easily removed; but a more weighty objection made against this theory is that which relates to the restoration of parts lost from the body, and which appears to be irrefutable.

gether unaccustomed to observations of the kind, may convince himself, every spring.

“Whoever has taken the trouble accurately to examine the spawn of the frog, must confess, that the idea of demonstrating the little black points it contains to be so many completely formed tadpoles, resembles Brother Peter’s method of reasoning in the *Tale of a Tub*, where he demonstrates to his brothers, that a brown loaf is a piece of excellent roast mutton.—But the abettors of the theory of organized germs have gone a step farther in support of their opinions. They refer to cases where even young girls, in all their maiden chastity, have become pregnant, from the untimely and premature evolution of one of these organized germs.

“The concurrence of facts is sometimes most wonderful. It happened, that in the very same year, in which Swammerdam announced his discovery in the spawn of the frog, a case was published in the *Ephem. rerum nat. curios.* delivered to the society by a celebrated court-physician of those times, Dr. CLAUDIUS, which exactly suited, as a confirmation of Swammerdam’s opinion.—A miller’s wife was delivered of a little girl, whose belly seemed of an unusual size. Eight days afterwards this big-bellied child was seized with such violent pains and restlessness, that every one who was present thought it could not outlive the next instant. The sick infant, however, in the mean time, actually bore a well-formed, elegant, lively little daughter, about the size of one’s middle finger, which was regularly baptized. During the time, and after the birth, the waters, placenta, and other impurities were duly discharged; but both the little mother and daughter died early on the following day!!!” (Prof. Blumenbach says, in a note subjoined to this account, that he has made use of the very words of a contemporary physician, Dr. OTTO, who was consulted by the grandmother (the miller’s wife) during her pregnancy. His nephew has vindicated and illustrated the whole history in a most learned and ingenious manner: ‘*D. C. J. Aug. Ottonis Epistola de fatu puero, sive de fatu in fatu.*’ Weissenfels, 1740, 8vo.)

“Baron von Haller very judiciously classes this case with another from the Transactions of the Academy of Sciences at Stockholm, where, on dissecting a young girl, bones, teeth, and hairs, were found in a tumour of the mesentery. These two cases he looks upon as principal evidences for the truth of the doctrine of germs pre-existing in the mother.

Besides these considerations, many arguments may be produced to shew the futility of that doctrine.

“ More probable than the former, unquestionably is the theory of *gradual formation* :\* according to which it is supposed, that previous to generation there exists no real germ, but crude matter only, from which the parts of the organic body are gradually formed. The power by which this formation is accomplished, is a certain formative effort pervading all nature, (NISUS FORMATIVUS ; *vis plastica, vis essentialis* ) manifesting its activity according to equal and determinate laws, although in a dif-

\* Another definition of *Epigenesis* deserves to be inserted here, as it is more concise, and as its author, Prof. Blumenbach, has not only embraced this doctrine as the most rational on a subject of so mysterious a nature, but has likewise been at great pains to elucidate the gradual formation of animate bodies by an additional hypothesis—his *nifus formativus* (*Bildungs-trieb*), or the spontaneous effort of Nature in forming homogeneous substances.—“ It is supposed,” says he, “ that the prepared, but at the same time unorganized rudiments of the fœtus, first begin to be gradually organized, when it arrives at its place of destination, at a due time, and under the necessary circumstances. This is the doctrine of *Epigenesis*.” And with a view to corroborate this supposition, the learned Professor makes the following categorical declaration : “ *That there is no such thing in nature, as pre-existing organized germs ; but that the unorganized matter of generation, after being duly prepared, and having arrived at its place of destination, acquires a peculiar action, or nifus, which nifus continues to operate through the whole life of the animal, and that by it the first form of the animal, or plant, is not only determined, but afterwards preserved, and when deranged, is again restored. A nifus, which seems therefore to depend on the powers of life, but which is as distinct from the other qualities of living bodies, (sensibility, irritability, and contractility,) as from the common properties of dead matter : that it is the chief principle of generation, growth, nutrition, and reproduction ; and that to distinguish it from all others, it may be denominated the FORMATIVE NISUS.*”

I shall only add, that this is, at present, the prevailing theory in the German Universities ; though, in reality, it leaves us as much in the dark as any other.

ferent manner, in the functions of nutrition and generation, as well as in the restoration of parts accidentally lost. It may be safely asserted, that this is a mere modification of the universal power of vitality ; if no obstacle be opposed to this plastic effort, the young organic body then receives its proper form ; but, in the contrary case, there arise various unnatural shapes and monsters. By the influence of climate, aliment, mode of living, and other incidental circumstances, this effort of Nature may, in the course of life, be variously modified ; nay, it is liable to changes in the very first crude matter, or in the plastic lymph, by the different constitution of the male semen.— But the principal arguments in favour of the theory of gradual formation are justly derived from the first origin of plants, from the formation of the chick in the egg, and from the reproduction of such parts of the body as have been lost, either by accident or necessity.

*E. N. D.*

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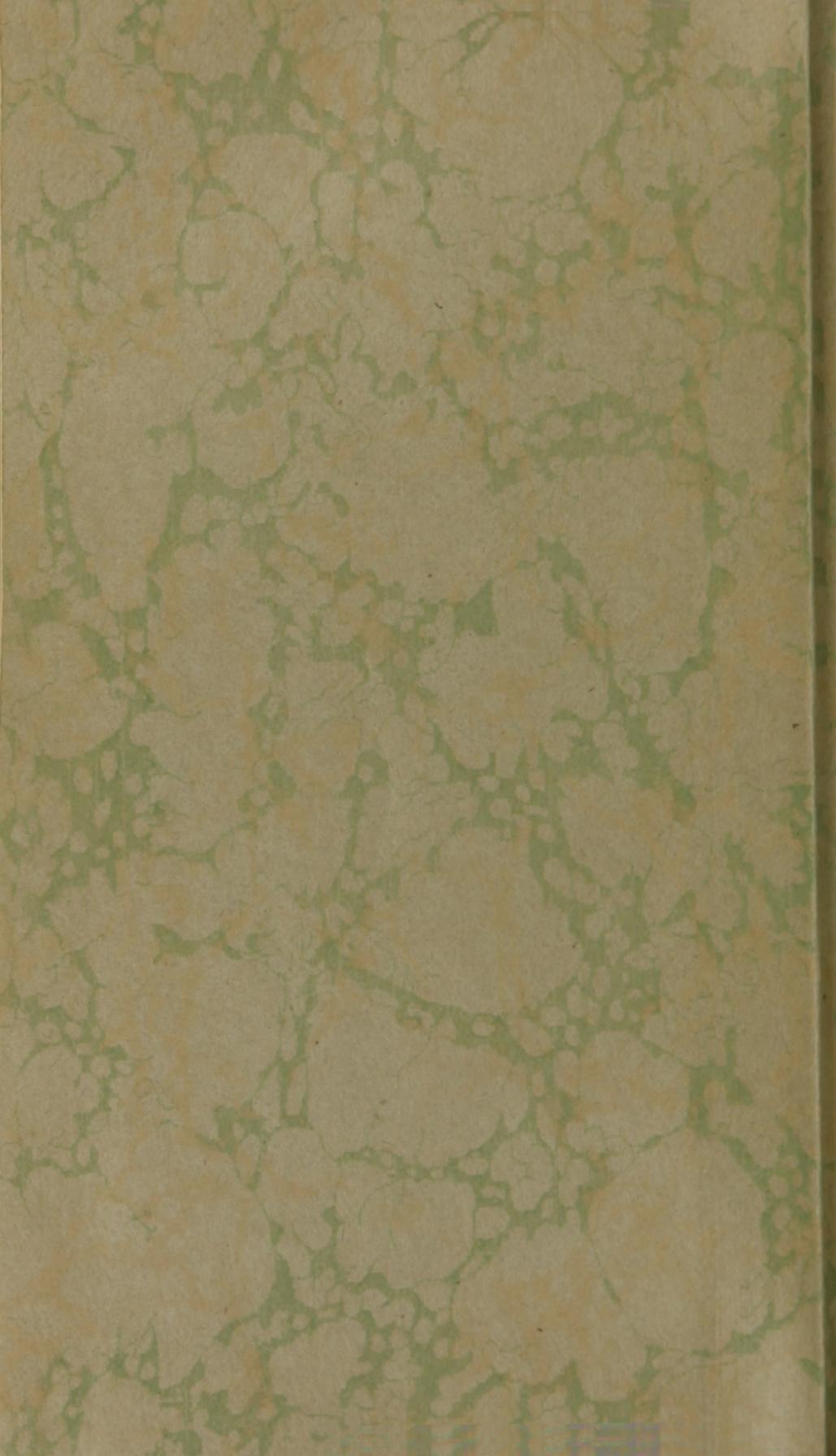
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