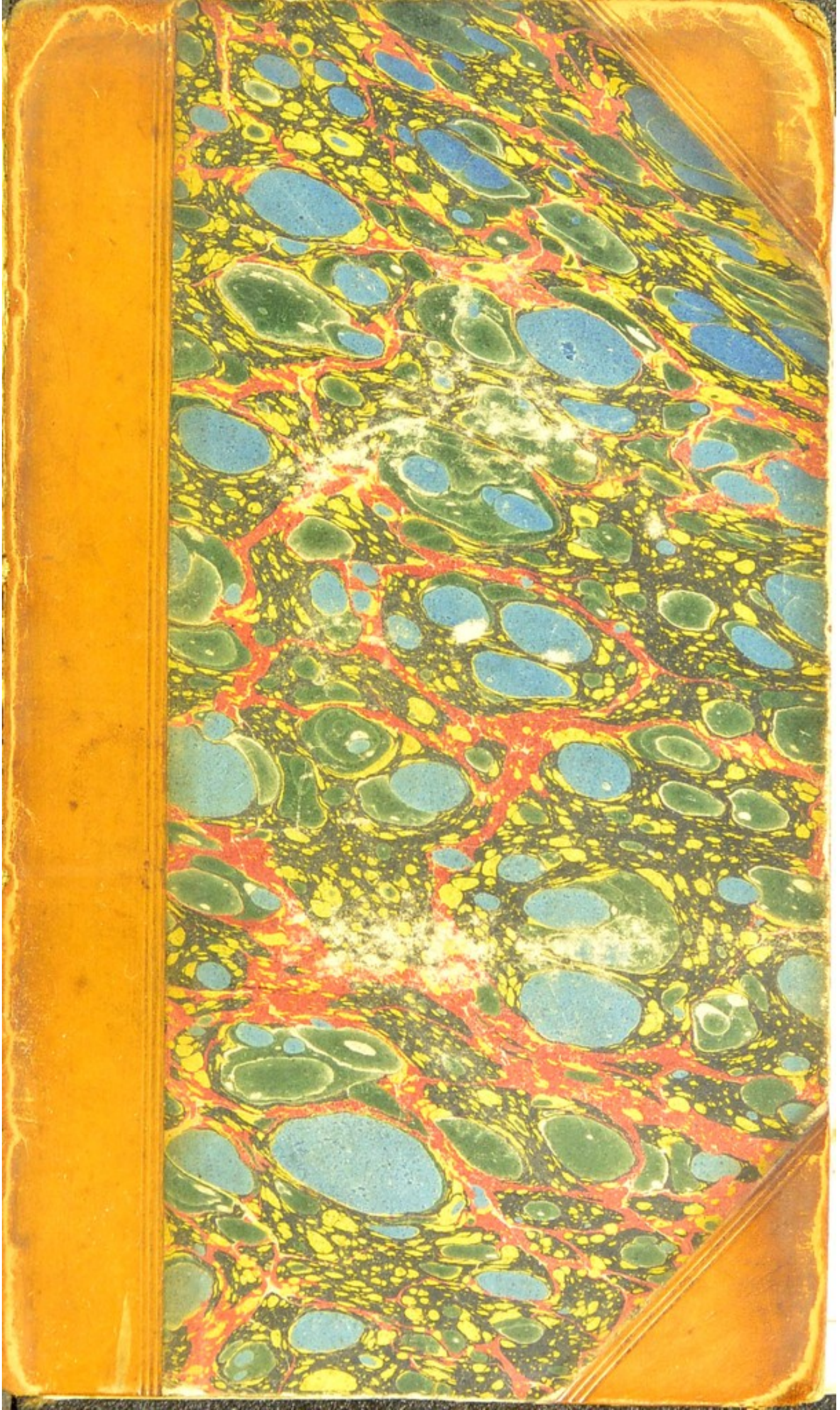
Observations on the mortality and physical management of children / [John Roberton].



G26-i.9

OBSERVATIONS

ON THE

MORTALITY

AND

PHYSICAL MANAGEMENT

OF CHILDREN.

BY

JOHN ROBERTON,

Member of the Royal College of Surgeons, Edinburgh; of the Literary and Philosophical Society of Manchester; and one of the Surgeons to the Manchester Lying-in Hospital.

LONDON:

LONGMAN, REES, ORME, BROWN and GREEN.

1827.

PRINTED BY JOHN HARRISON, WARRINGTON.

TO

THE MEDICAL OFFICERS

OF THE

MANCHESTER LYING-IN HOSPITAL,

JOHN HULL M. D. F. L. S.,

Consulting Physician.

JOHN THORPE ESQ.....
ROBERT AGNEW M. D.....
ROBERT THORPE ESQ..... } SURGEONS EXTRAORDINARY.

GEORGE HUDSON ESQ.....
THOMAS RADFORD ESQ....
KINDER WOOD ESQ.....
JAMES LOWE ESQ.....
THO^{S} FAWDINGTON ESQ... } SURGEONS.

This Volume

IS MOST RESPECTFULLY INSCRIBED

BY THEIR COLLEAGUE

THE WRITER.

PREFACE.

It has been said of some of our great men and eminent writers, that had they been born in Sparta, they would probably have been precipitated from the Taygetus, as too feeble to be reared. The true value of a human being was imperfectly known, even to the most enlightened of the ancients. It remained to be taught by that religion which assures us of his immortality. From the belief of this truth, and from it alone, springs that comprehensive benevolence, which cares as well for the weak and the misformed, as for the healthy and the beautiful, on the ground

that they are intrinsically equal as being heirs of the same high destiny. In other words, it is this belief which furnishes the only powerful motive to the cultivation of that department of education called Physical; which consists not so much in training the vigorous (an easy duty) as in strengthening the feeble, maintaining the health under circumstances unfavourable to it, and improving the bodily faculties when, by nature or accident, they are defective.

This view of the influence of so important a principle acquires additional interest, when we contrast the prevalence of infanticide, and the general want of parental affection in Pagan countries, at the present day, with that attention to the health, comfort, and instruction of the young, which distinguishes our own nation.

The following Treatise, the subject of which has suggested these remarks, is divided into Two Parts. PART FIRST is designed to shew the amount, as well as the causes, of infantile mortality in this country. In the construction of the Tables and in the calculations generally, the

writer has endeavoured to be accurate, though, after all his care, errors may have been overlooked. He is aware that some may object to his having, in estimating the mortality for different places, taken the deaths under the age of *ten*, in the registers, as the basis of his deductions, instead of the proportion of deaths under this age to the number of births, which, he admits, would furnish preferable data. The truth is, so many of the baptisms in this country are not entered in the public registers that it would be next to impossible to ascertain the number of births with accuracy,—a circumstance, which had there been no other difficulty in such a mode of calculation, would have prevented his adopting it.

In PART SECOND, that department only, of the Physical Management of Children is attempted, which comprehends the maintenance and improvement of the health: that which relates to the cultivation of the individual faculties has been omitted as foreign to the design of the work.

In conclusion, the writer would observe, that he indulges the hope of being able, in pursuance of the subject of the present volume, to offer, at a future period, some notice of the diseases of children.

Manchester,
Nov. 20, 1827.

PART I.

ON

THE MORTALITY OF CHILDREN.

SECTION I.

GENERAL REMARKS ON THE MORTALITY OF CHILDREN.

It is a remark as true as it is homely, that "a parent has no property so precarious as his children." A large proportion of all who are born die under their *tenth* year—sent into the world, some already dead or immediately to perish, and others, it might seem, for no purpose but to undergo a variety of sufferings, and become the early victims of disease. In this respect the successive generations of mankind somewhat resemble the produce of a luxuriant fruit tree; numerous blossoms are put forth, and afterwards abundant fruit: but of the blossoms, many are shed as soon as they expand; and of the fruit, much falls before it is full grown. A certain ratio of infantile mortality appears to be inseparable from the constitution of the human race under existing circumstances: but why it should be so, we are unable to explain. In the

moral as well as the natural world, there are many phenomena equally perplexing, which the most penetrating cannot solve; and which the wise and prudent do not dare to arraign. From any thing we know, however, we are not warranted to infer that human beings are created with the design that they should perish in infancy. That many die so early we have no reason to think is otherwise than *incidental* to their state. We are always to discriminate between what is the design of a thing, and what is incidental to it. The teeth, for example, are obviously made to grind the food, and for some other purposes; yet they often prematurely decay and ache, which are no *purposes* of theirs; there is nothing whatever in their structure and the materials of which they are formed, to shew that the caries and aching are designed. The same reasoning applies to infantile mortality in general. There is rarely any thing in the structure and condition of new-born children which shews that they are likely to die in youth, much less that they are designed to die within that period. Their structure and condition, it is true, expose them to many diseases which often end in death; but such diseases are as much *incidental* to infants as caries and aching are to the teeth. We have no more reason *à priori* to infer, that, of a hundred

healthy new-born infants, a certain proportion will die in infancy, than that a certain number of a sound set of teeth will become prematurely carious. Experience no doubt leads us to expect, that some of the hundred infants will die in youth, as well as that some of the sound set of teeth will suffer premature decay.

It has appeared to me needful to insist on this view of the subject, as sentiments of an opposite description have been broached by several writers, the tendency of which is to produce indifference to the causes of human mortality—a kind of political hardheartedness which would represent the most terrible diseases to be *designed* as salutary checks to excessive population. A writer of this class speaking of the small pox calls it "the poor man's friend who happens to be burthened with a large family."* By the same reasoning, those vices and crimes which destroy the greatest number of human beings are, under certain circumstances, to be viewed as salutary *checks* and of course *designed*.†

With regard to the mortality in question—that of infants, our duty is simply to investigate its

* Birch.

† Since the publication of Malthus's profound work on population many absurd, and some criminal, notions have been promulgated on the subject of checks to the increase of mankind, most of them originating in a misapprehension of the opinions of this writer.

causes, and endeavour to control them by every method in our power. It is true, the amount of this mortality will always be great, even under the most favourable circumstances, and when opposed by the best skill and management; yet we have the consolation to know that such means are generally successful in lessening it.

To illustrate this position, it may be observed that a hundred healthy new-born children taken to be nursed and brought up in the confined wards of a Foundling Hospital, will exhibit a very different ratio of mortality, compared with the same number of equally healthy infants, nursed in the usual way, and reared in a dry elevated country situation. In the former instance, at least *ninety* of the hundred will die under *ten* years of age. Of the latter not more perhaps than *twenty-five* or *thirty* within the same period. There will also be greater mortality in the families of the poorest class, than in those whose circumstances are comfortable, and greater in towns than in the country. It will be modified by diet, clothing, exposure, climate, medical skill, and by other causes to be afterwards mentioned.

SECTION II.

OF BILLS OF MORTALITY.

In order to ascertain what proportion the mortality of children under the age of *ten* years bears to the mortality *at all ages* above that period of life, we have recourse to the parochial registers of the dead. These, as the only or principal source of such information, are regarded by some as of rather doubtful authority, although so far as I can perceive, without just grounds. The registers are indeed far from being so comprehensive as could be wished; but their correctness, since the Parish Act of 1812, cannot be disputed.

Mortuary records have long been known in this country. In the year 1538, it was ordered by Henry 8th that the incumbent of every parish should keep true and exact registers of all christenings, weddings, and funerals in his district. Similar orders were again issued by Queen Elizabeth, the former we may presume having been disregarded. In the course of time the increase of dissenters, the confusion of the civil wars, and especially the carelessness of Registrars, are said

to have introduced great confusion into many of these documents, so that up to 1812 their accuracy in general is very questionable. In that year an act passed which prescribes a form in which such registers are to be kept. The name, residence, &c. of the dead are to be set down as before, and in addition, the *age*, which had always been omitted, except in a few places where mortality bills existed on an improved plan. To insure accuracy, the Registrar is made liable to a penalty for each omission: and the officiating minister has to put his signature opposite each entry at the time it is made in the register.

The deviser of this act deserves little praise for his exertions. His plan is meagre and defective in the extreme. If the mode of parochial registration which had been so long followed required revisal, it should have been entered upon with full intelligence as to the nature of the task; and a sincere desire, as far as possible, to remedy every defect; qualifications of which no trace appears in the act in question. It is true the mortuary registers (I speak not of the others) are improved inasmuch as they now furnish the ages of the dead; but the diseases and accidents which produce death, the trade or profession, condition in life, and other particulars relative to the dead; also the price of provisions, the rate of wages, and the state

of the weather—all most important to be recorded, have been entirely overlooked in the provisions of the act. As early as the year 1687, accurate and comprehensive mortality bills were published at Breslaw, extracted from registers kept in that city. It was of these bills Dr. Halley availed himself in the construction of his celebrated tables to shew "the probable duration of life at every age." About this period, the London mortality bills began to be published in their present form, and those of Northampton in 1735. Upon the latter Dr. Price formed most of his calculations in his elaborate work on Reversionary Payments.

To the late Dr. Percival of this town we are indebted for many judicious observations on the construction of mortality bills, and for pressing the subject with success on the notice of his friends. At his suggestion, registers were established on an excellent plan at Chester by Dr. Haygarth in the year 1772, at Warrington by Dr. Aikin in 1773; and in Liverpool about the same time by Dr. Dobson. They are now in each place we may presume, rich in materials for the purposes of political as well as medical science.

The utility of accurate and well-constructed Parish Registers is forcibly exhibited by Dr. Percival in the following passage, extracted from his Essays. "By such an institution the increase

and decrease of certain diseases, the comparative healthiness of different situations, climates, and seasons, the influence of different trades and manufactures on longevity, with many other curious circumstances, not more beneficial to physicians than beneficial to mankind, would be ascertained with tolerable precision."

In several of the larger towns in Scotland, mortality registers have long been kept. Sweden, however, is pre-eminently distinguished for the universality, accuracy, and comprehensiveness of its registers. From them extensive tables have been extracted and published, which furnish data equally curious and important.

Although I could have wished for more ample materials to illustrate the subject of infantile mortality, yet perhaps sufficient are brought forward in the following section, from which to deduce a pretty accurate estimate of its amount in various parts of the kingdom, in large cities, towns, villages, and in the open country.

SECTION III.

TABLES SHEWING THE RATE OF INFANTILE MORTALITY IN DIFFERENT PLACES.

To assist in understanding the following tables, which are founded on bills of mortality, it may be observed, that the mortality bill of a town or parish is merely a transcript of its Registers arranged in such a manner as to present whatever information they furnish in a condensed view.

The London Bills for thirty five years, from 1786 to 1820 inclusive, afford the following results.

For the sake of exhibiting more clearly the average mortality under the age of *ten* at different intervals of time; I divide the *thirty five* years into *five* equal periods of *seven* years each. The *first column* of figures in the Table is the FIVE PERIODS; the *second* shews the TOTAL NUMBER OF DEATHS IN THE REGISTERS DURING EACH PERIOD: the *third column* exhibits the PERCENTAGE OF DEATHS UNDER TWO YEARS OF AGE IN EACH PERIOD; the *fourth* in like manner, the PERCENTAGE OF DEATHS BETWEEN THE AGES OF TWO AND FIVE YEARS: the *fifth* the PER-

CENTAGE OF DEATHS BETWEEN FIVE AND TEN YEARS OF AGE: and the *sixth* and last *column* of figures, the TOTAL PERCENTAGE OF DEATHS UNDER THE AGE OF TEN, IN EACH PERIOD.

Lastly, after the Table is the TOTAL PERCENTAGE OF DEATHS UNDER THE AGE OF TEN, on the average of the FIVE PERIODS, that is, on the average of *thirty five* years. The per cents are set down in whole numbers and decimal fractions: for example, the whole number of deaths in the FIRST PERIOD is 137260, of which it is shewn there are 32.68 per cent. or about $32\frac{2}{3}$ in a hundred under the age of 2 years, 9.99 per cent. or very nearly 10 in the hundred between the ages of 2 and 5 years and so on, of the others.

TABLE.

PERIODS.	Total No. of deaths in the Registers.	Under the age of 2.	Between 2 and 5.	5 and 10.	Total Deaths under 10.
I.	137260	32.68	9.99	3.91	46.58
II.	134760	31.77	11.05	4.02	46.84
III.	133864	28.73	11.37	4.25	44.35
IV.	127521	29.99	11.05	4.00	45.04
V.	137908	26.84	9.65	4.30	40.79

Average total per centage of deaths in 35 years under the age of *ten* .... 44.72.

In the year 1811, the population of London within the bills of mortality, was *seven hundred and seventy seven thousand;* and in 1821, *one*

million one thousand and forty nine: annual mortality 1 in every 34.19.

Before proceeding to the tables which relate to other places, it will be necessary to make a few remarks on the above table, compiled from the London bills, that the reader may better comprehend the nature and authority of such documents.

There can be no doubt that the proportion of deaths under 10, as stated in the London table is too low; for the following reasons.

1*st*.... The London bills include only such as are buried with the rites of the Established Church. Dissenters, Jews, and others, many of them of the poorest class, in which the rate of infantile mortality is very high, are omitted. But for this circumstance there is reason to think that the deaths under 10 would be more than they are in the table by at least 4 or 6 per cent.

2*ndly*.—London, it is well known, does not maintain itself in population but is annually receiving from the Country multitudes of recruits, mostly unmarried, between the ages of 15 and 30; consequently the adult portion of the inhabitants will at all times unduly preponderate; and the number of deaths *above*, and the number of deaths *under*, 15, will of course be in like disproportion.

There are many considerations to be borne in mind in estimating from mortuary registers the

relative number of deaths under 10, in towns where the population is rapidly increasing. If this increase is owing to the excess of the births *above* the deaths, the mortality under 10 in the registers will be too great; as, in such a case the number of inhabitants that furnishes the deaths *under this age* will be proportionally greater than that which furnishes the deaths *above it.*

In Manchester, Glasgow, Liverpool, and other increasing mercantile towns, where the excess of births above the deaths is always considerable, this objection does not apply; or only in a trifling degree; as the immense annual influx of unmarried people above the age of 10, must nearly counterbalance the excess of births above mentioned.*

In a Country parish with an increasing population, the case may be different; as such increase will in general depend solely on an excess of births which will not be counterbalanced by new settlers from other quarters above 10. On the contrary, part of the inhabitants above *that age* may be expected to emigrate to neighbouring towns.

* That such is the case there can be no doubt. Taking the whole of Lancashire I find that the number of inhabitants above the age of ten is to that under ten in the proportion of 2.30 to 1; or in other words twice and about a third more people are above than below ten. In Manchester however the proportion is 2.52 to 1, that is to say, there are twice and about a half more above, than there are below ten.

From this cause the mortuary registers of some country parishes exhibit the deaths under 10 rather too high.

In the London table it is shewn that on an average, so many deaths are under 2, so many between 2 & 5, and between 5 & 10, and finally that 44.6 in the hundred of the annual deaths in that city are under the age of 10. The reader is not thence to infer that precisely 44.6 per cent. of all who are born in London die under that age. Were the births and deaths equal, and the population stationary, this would be the case; but as the population not only in London but in all the places to which the different tables refer, is frequently varying, the mortality at all ages as it appears in the registers, does not shew, exactly, the probabilities of life though perhaps it does so with sufficient accuracy for the purposes of medical statistics. In America and other countries increasing with great rapidity from the excess of births over the deaths, the probabilities of life, and the mortality in the registers, do not nearly approximate.

As most of the following tables are formed on an average of the deaths for many successive years in different places, some of them in parts of the country remote from each other, the reader will compare the results which they present and judge

for himself. It being no part of my undertaking, to write a theory of population I forbear enlargeing on these topics.

GLASGOW....Dr. WATT's Table of the Infantile Mortality in this city for 30 years, from 1783 to 1812 inclusive, is compiled from all the registers of both city and suburbs. Of course the deaths of no class of the people are omitted. He arranges his table in 5 equal periods of 6 years each.*

TABLE.

PERIODS.	Total No. of deaths in the Registers.	Under the age of 2.	Between 2 and 5.	5 and 10.	Total Deaths under 10.
I.	9994	39.40	10.66	3.42	53.48
II.	11103	42.38	11.90	3.79	58.07
III.	9991	38.82	12.21	3.45	54.48
IV.	10034	33.50	13.43	51.0	52.03
V.	13354	35.89	14.22	5.58	55.69

Average total number of deaths under 10, for 30 years—54.75.

"The population of Glasgow was ascertained in 1780, in 2785, in 1791, in 1801, and in 1811. These 32 years," says Dr. WATT 'I divide into four unequal periods. The 1*st.* consisting of six years, from 1780 to 1785 inclusive. The *2nd.* consisting of six years from 1785 to 1791. The 3*rd.* consisting of ten years from 1791 to 1801, and the *4th.* consisting also of ten years, from 1801 to 1811."

* Watt on Chincough.

In each period taking the average population, and the annual average number of deaths the proportions stand thus:

PERIODS.	Population	Deaths	Proportional Mortality.
I.	44360	1661	1 *in* 26.7
II.	56233	2012	1 *in* 27.9
III.	75173	2127	1 *in* 35.2
IV.	96997	2377	1 *in* 40.8*

LIVERPOOL....I have obtained the mortality bills of this town for 12 years, from 1812 to 1825 inclusive, excepting the bills for 1815, and for 1821, which could not be procured. Here a mortality bill is published annually as in London. It appears to be drawn up with much exactness, and includes the result of all the registers, 49 in number, both of the Establishment and of the various Dissenters. I divide the Table into 3 periods; the 1*st.* includes 3 years; the 2*nd.* *five* years; the 3*rd.* four years; the gaps caused by the bills that are missing suggest this division.

PERIODS.	Total deaths in the Registers.	Under 2	between 2 an d 5	5 and 10	Total under 10
I.	7757	31.28	10.94	5.59	47.81
II.	16942	32.42	11.24	5.19	48.85
III.	15592	33.06	10.30	4.32	47.68

Average total number of deaths under 10....48.11

* Watt in the Edin. Med. and Surgical Journal.

By the census of 1811, the population was 108,338. In the year 1821 it had risen to 141, 487, being an increase in 10 years of 33,149. Liverpool has been long noted for the longevity of its inhabitants. At the last Census there were only 14 persons in the county of the age of 100 years or upwards; and, of that number, 6 resided in Liverpool.

Taking the mean number of inhabitants which is 124912, and the annual number of deaths on the average of the above 10 years which is 3173, we find that *one* out of every 39.36 died annually between the years 1811 & 1821.

The number of families is 25309; of which 11421 only are employed in trade or manufactures.

MANCHESTER....In this town no mortality bill is published . Before 1812 the ages of the dead are not noticed in the registers. I have examined the list of interments at the Collegiate Church for 8 years, from 1816 to 1823 inclusive, and also the lists at Rusholme Road cemetry for four years—from April 1821 to the same month in 1825. In the registers of neither place are the still born entered. My researches have been confined to these two burial grounds, believing that the results may be taken as a tolerable fair exhibition of the rate of mortality for the town at large.

TABLES.

COLLEGIATE CHURCH.

Total No. of deaths in the Registers.	Under 1	Between 1 and 2	2 and 5	5 and 10	Total under 10
8656	26.59	13.81	4.78	4.47	59.65

RUSHOLME-ROAD CEMETERY.

In Registers	Under 2	2 and 5	5 and 10	Total.
3559	40.06	12.43	3.82	56.31

It would appear that the mortality under 10 is greatest at the Collegiate Church. This may depend merely on the table for the former place being made from an average of more years than that for the latter. The two places give an average of 57.98 under 10 years of age.

At the time when Dr. Percival wrote,—1773, the population was 27246, and *one* out of every 30 died annually. 12 years before, an account had been taken, when it was found that *one* out of every 21 died annually, which shews how much the town was improving in salubrity at the date of Dr. P's Essays. What the relative mortality under 10 might then be I cannot ascertain; but I suspect it was as great or greater than it is at present. According to Dr. Percival, one half of the children born died under 5 years.

In the year 1821, the population of Manchester and Salford was 155758. In the parish at large the operative class is proportionally very great; of 38414 families, which it contains, no fewer than 34977 are employed in trade, manufactures, or handicraft. Not having been able to ascertain the total annual number of deaths in the town, I cannot calculate what proportion of the inhabitants dies annually. It is probably as low as in most places of equal magnitude.*

WARRINGTON....Mortality Bills for this town for 9 years,—from 1773 to 1781 inclusive, are furnished in Dr. Price's work ;† as they were kept under the eye of Dr. Aikin, their accuracy may be relied on. At that period the number of inhabitants was about 8000, and the average annual number of deaths 302.09 being at the rate of 1 out of every 26.48.

TABLE 1st.

Total deaths in the Registers.	Under 1	between 1 and 2	2 and 5	5 and 10	Total under 10
2719	24.09	14.41	12.83	3.79	55.12

I have procured Bills for the same town for 8 years of a more recent date, namely from 1818

*In Sir G. Blane's Essays the annual mortality of Manchester is stated to be 1 in 71 ; but so palpable an error must surely have originated with the printer rather than the author. The mortality in question is certainly not lower than 1 in 40.

† Price on Reversionary Payments,

to 1825 inclusive. In 1811 the inhabitants had increased to 11738, and in 1821 to 13570. The annual average number of deaths for the above period was 343.75, or about 1 in 37 of the population. Of 3482 families which the town contained in 1821, 2009 were engaged in trade, manufactures, or handicraft.

TABLE 2nd.

Total deaths in the Registers.	Under 6 Months.	6 Months & 1 Yr.	1 and 5	5 and 10	Total under 10
2910	15.32	10.41	11.78	7.14	44.65

Total average under 10 of the two periods 49.88.

CHESTER....Mortality Bills for this city for 10 years,—from 1772 to 1781 inclusive, are to be found in the work of Dr. Price. They were kept by Dr. Haygarth with the greatest accuracy. Unluckily I have not been able to procure Bills of this city of a later date. Dr. Haygarth in his day, considered Chester to be one of the healthiest cities in the kingdom. The number of inhatants in the year 1774 was 14713. The annual Mortality as 1 of 31.01. In 1821, the population had increased to 19949.

TABLE.

Total deaths in the Registers	Under	between 1 and 2	2 and 5	5 and 10	Total under 10
4090	19.70	8.82	11.85	4.05	44.42

NORTHAMPTON...The Bills for the parish of All Saints in this town for 46 years,—from 1735 to 1780, are furnished by Dr. Price.

TABLE.

Total deaths in the Registers.	Under 2	between 2 and 5	5 and 10	Total under 10
4689	32.60	7.80	4.28	44.68

CARLISLE....The Carlisle Bills for 9 years from 1779 to 1787 inclusive, are given by Mr. Milne, as extracted by him from a valuable work written by Dr. Heysham of that town.* The population of the parishes of St. Mary and St. Cuthbert in the year 1787 was 8677; the annual mortality 1 out of 40. Of the 3022 families which the place contained in the year 1811, 2377 were employed in trade, manufactures, and handicraft.

TABLE.

Total deaths	Under 1	1 & 2	2 & 3	3 & 4	4 & 5	5 & 10	Under 10
1840	21.19	9.40	6.94	3.80	2.77	4.83	48.93

HOLY CROSS *in Salop*....Bills for this parish for 30 years from 1750 to 1780 inclusive kept with scrupulous care by the Rev. Dr. Gorsuch, Rector, are to be found in different volumes of the Phil. Trans. As a whole they form the most valuable record of the mortality of a country

* Milne on Annuities, &c.

parish any where to be met with. The following table is arranged in *three* equal periods of 10 years each. Average population in the *three* periods 1066; annual rate of mortality 1 out of every 33.10.

TABLE.

PERIODS.	Total deaths	Under 1	1 & 2	2 & 5	5 & 10	Total under 10
I.	290	15.17	5.17	9.65	7.93	37.92
II.	365	20.00	6.57	10.68	6.30	43.55
III.	311	19.29	7.07	10.29	4.50	41.15

Total average under 10 for the three periods 40.87.

ACKWORTH *a Country Parish in Yorkshire*....The Bills for 20 years, from 1747 to 1767, are furnished by Dr. Price. I arrange them into a table of *two* equal periods. The average number of inhabitants was 728, and the annual mortality 1 out of every 55.36.

TABLE.

PERIODS.	Total deaths	Under 2	2 & 5	5 & 10	Under 10
I.	107	15.89	2.80	3.74	22.43
II.	156	19.94	10.25	3.20	33.39

The average total under 10 in both periods 27.91.

GREAT SHEFFORD *in Berkshire, a country Parish*....The Bills accurately kept for 10 years, from 1747 to 1757 by the Rev. R. Forster, incumbent. Number of inhabitants 425: annual mortality 1 out of 51.20.

TABLE.

Total deaths	Under 2	2 & 5	5 & 10	Total under 10
83	30.12	4.82	3.61	38.55

SPALDING, *a parish containing a market town in the Lincolnshire Fens*....The Bills for 14 years, from 1798 to 1811 inclusive, published by Milne, as furnished to him by the Rev. Dr. Johnson of that place. Total mean population 3780, of which 1 person out of 31.34 died annually.

TABLE.

Total deaths	Under 1	1 & 5	5 & 10	Total under 10
1519	35.64	8.75	3.75	48.14

To contrast with the mortality of country parishes in the last century I have procured extracts of a recent date from the registers of four country parishes, two in Lancashire, and two in Cheshire.

ECCLES, *near Manchester*....This is a parish of great extent, and has many populous villages. Number of inhabitants 23331. In the year 1821 it contained 4233 families of which 3629 were employed in trade, manufactures, or handicraft. The following table gives the results of the Eccles registers for 7 years,—from 1818 to 1825 inclusive, excepting 1823 which was acci' ntally omitted.

Assuming that all the interments in the parish take place at Eccles Church, (which I believe is not precisely the case) the annual mortality is 1 out of 48.34.

TABLE.

Total deaths in the Registers.	Under 2 years	between 2 and 5 „ „	5 and 10 „ „	Total under 10
3378	35.46	10.92	2.96	49.34

WINWICK, 3 *miles North of Warrington.* Of the 3027 families, which this parish contains 2458 are employed in trade, manufacures or handicraft. The population in 1821 was 16229. The following Table is founded on extracts for 9 years from the registers kept at Winwick Church.*

TABLE.

Total No. of deaths in the Registers	Under 1	between 1 and 2	2 and 5	5 and 10	Total under 10
1486	16.88	7.06	6.12	4.66	34.72

LYMM, *a country parish in Cheshire.* Most of the inhabitants are employed in Agriculture. In 1821 their number was 2090. Assum-

* Having no means of ascertaining with exactness what proportion of the interments in the parish takes place at the Parish Church, I am unable, on that account, to calculate the annual mortality.

ing that the funerals registered in the parish church are those of all that die in the parish, the annual mortality is 1 person out of 56.48. The following table is for 9 years from 1817 to 1825 inclusive.

TABLE.

Total deaths in the Registers.	Under 1 year	between 1 and 2 „ „	2 and 5 „ „	5 and 10 „ „	Total under 10
333	24.92	6.60	4.80	3.90	40.22

GRAPPENHALL, *a Country Parish* 3 *miles South of Warrington*....The majority of the inhabitants follow Agriculture. Their number I have not been able to learn. The table is formed from extracts made from the parish registers for 11 years, from 1815 to 1825 inclusive.

TABLE.

Total deaths in the Registers	Under 1	between 1 and 2	2 and 5	5 and 10	Total under 10
397	20.40	5.03	7.30	2.26	34.99

In addition to what the foregoing tables exhibit, it is proper to notice the mortality which occurs in the few first months of life. In the Dublin Lying-in Hospital one infant in about 6½ died under 15 days old. In the Westminster Lying-in Hospital the mortality was less. Of

1400 women, 1 in every 16 buried her child before the end of two months.* In the Manchester Work-house, have been born during the last 7 years 347 living children, of which number 53, or about $\frac{2}{13}$ of the whole were dead by the 35th day. The deaths were at the following ages, under *eight* days 22, in the next seven days 10, from the 14th to the 22nd day 7, thence to the 29th 7, and 7 more by the 35th day, in all 53.†

The following table amply illustrates this subject. It is arranged from the Chester, Northampton, and Warrington mortality bills. Of 3894 deaths under the age of ten years there were

Under 1 *month*.....	400
Between 1 & 2.....	218
.....2 & 3.....	139
.....3 & 6.....	282
.....6 & 9.....	317
.....9 & 12.....	347
Total	1703

The following summary of all the Tables shews the mortality at different ages under

* See Clarke and Bland's Reports of the respective Hospitals in the Phil. Trans.—Vols. 71 & 76.

† Underwood affirms but without stating the source of his information, that out of 2785 children who have died in the first month, 1292 that is more than 46 in the hundred have expired the first day.

10 years, in cities, smaller towns, village parishes, and agricultural parishes.

1st.—Cities and Large Towns.

	Under 2	2 and 5	5 & 10	Total Under 10
London..... Liverpool ..... Glasgow ..... Manchester.....	35.12	11.88	4.39	51.39
2nd.—Smaller Towns and Cities.				
Chester..... Carlisle ..... Warrington..... Northampton..	31.49	10.83	4.65	46.97
3rd.—Village Parishes.				
Spalding..... Lymm ..... Eccles.....	35.36	7.01	3.54	45.90
4th.—Agricultural Parishes.				
Winwick..... Grappenhall ... Great Shefford Ackworth ..... Holy Cross.....	24.37	6.99	4.04	35.40
Grand average total..	31.58	9.18	4.15	44.91

It is curious to observe how near the proportional mortality under 10, in foreign countries, approaches *that* in our own. According to SUSMILCH's German Tables it is 43 per cent. for the Country, 47.7 for small Towns, and 50.2 for large Cities. In France, according to DUVILLARD, it is 44.89 on the average of the kingdom.

SECTION IV.

REMARKS ON THE FOREGOING TABLES; AND ON THE CAUSES OF INFANTILE MORTALITY IN LARGE TOWNS.

In glancing at the rate of infantile mortality in the Tables for different places, we cannot but observe how much greater it is where the operative class preponderates, than where the several orders of society are more nearly balanced. This is strikingly apparent, when we compare the Glasgow and Manchester tables with any of the others. The average mortality under 10 of these two places is 56 per cent, whilst that of Liverpool is 48 and a fraction only, and that of London 44½. It is true the per centage in the latter instance is probably too low; nevertheless, as neither in Liverpool, London, nor any other large town the working population bears so high a proportion to the middle and upper classes as in Manchester (which may correctly be styled an immense workshop,) we can scarce doubt that the greater

infantile mortality in the last mentioned town is mainly influenced by this circumstance.*

The Eccles table tends further to illustrate this observation. In the parish of Eccles more than *nine-tenths* of the inhabitants subsist by manufactures, trade, or handicraft. *There* the mortality under 10 is no less than 49.38, a higher rate even than that of Liverpool, or any of the other places, except Glasgow and Manchester; which can be ascribed to no other cause than the large proportion of its operative population. In Warrington and Carlisle, infantile mortality is great for the same reason. In both places operatives form the great bulk of the people. With these towns may be contrasted Northampton and Chester, where the working class is comparatively small. In each of these places the mortality under 10 is nearly 5 per cent lower than in either of the former.

In the country parishes of Winwick, Grappenhall, and Ackworth, where the chief employment

* The number of married women delivered annually by "The Manchester Lying-in Charity" shews in a strong light how large a proportion of the inhabitants is of the poorest class. In the 12 months preceding May 1826, the number delivered was 3454. As the population of the town and suburbs is 155,758, and the annual number of births at the rate of 1 for every 28 inhabitants, (though 1 for every 30 would perhaps be more correct,) is 5563, nearly, we perceive that the accouchements of a portion of the population so great as 96,708 are annually attended at the public expense.

is agriculture,* the total number of deaths, under 10, averages about 32½ per cent. In Lymm, where there is a considerable village, it rises to above 40. In Spalding, again, it is extremely high; but this parish is in the Fens, and its total mortality is even greater than that of London, being 1 out of every 31.34 of the inhabitants.

When we consider the peculiar circumstances of the labouring poor in Manufacturing Districts, their frequent privations, their improvidence, ignorance, and vicious habits, and the low, badly ventilated abodes of the majority of such of them as live in large towns, we cease to wonder that so few of their children comparatively should be reared.

In Manchester and Glasgow, many of the poorest class are Irish. It is difficult to estimate their number, but it cannot be less than 25 or 30 thousand in each place. Their habits are well known. In confined filthy yards, noisome cellars, old ruined buildings, we are sure to find this singular people the principal tenants, huddled together in their peculiar way, and, in spite of every privation, marvellously content. So perfectly do most of them continue to maintain

* The immense parish of Winwick cannot, as a whole, be styled agricultural. HERE, that part of it only is alluded to, where the inhabitants may be supposed to bury at Winwick Church.

their native habits in this country, that no conveniences and comforts which they see others of their own condition enjoy, and which they might as easily attain, do in the least degree stimulate them: a proof how slow and difficult is the progress from barbarism to civilized life.

No circumstance in their mode of living is more singular than the numbers that frequently agree to inhabit the same apartment or dwelling, forming together an immense motley family, to the features of which no painter or dramatist has yet done justice. This gregarious propensity of theirs was remarked in the inspection of the state of the poor made during the late distress in this town. As many as 40 persons were occasionally found inhabitants of the same wretched dwelling. Such a practice must operate on infantile life more perniciously than even the pestiferous wards of a Foundling Hospital; and, no doubt, mainly contributes to the high rate of mortality under 10 in this place and in Glasgow. As this is a subject of which the police of every great town should take cognizance, I transcribe the following sketch of the habitations of the poor in Dublin, from a work on the population of that city by the Rev. J. WHITLAW. "As I was usually out at very early hours on the survey," says this writer, "I frequently surprised from 10 to 15 persons of all ages

and sexes in a room not fifteen feet square, stretched on a wad of filthy straw, swarming with vermin, and without any covering, save the wretched rags that constituted their wearing apparel."

He further says, that he occasionally found from 30 to 40 individuals in one house: and some years before the period of his survey, No. 6, Braithwaite Street contained 108 human beings. From a careful inspection which he made of Plunket Street, it appeared that 32 contiguous houses contained 917 inhabitants, being on an average 28.7 to a house: and the entire Liberty averaged from 12 to 16 persons to each house.*

* The following sketch is too graphic to be omitted. "This crowded population where it obtains is almost universally accompanied by a very serious evil; a degree of filth and stench inconceivable except by such as have visited these scenes of wretchedness. Into the back yard of each house, frequently not ten feet deep, is flung, from the windows of each apartment the ordure and other filth of its numerous inhabitants, from whence it is so seldom removed that I have seen it nearly on a level with the windows of the first floor; and the moisture that after heavy rains, oozes from this heap, having frequently no sewer to carry it off, runs into the street by an entry leading to the staircase. One instance out of a thousand that might be given, will be sufficient. When I attempted, in the summer of 1798, to take the population of a ruinous house in Joseph's Lane, near Castle Market, I was interrupted in my progress by an inundation of putrid flood, alive with maggots, which had, from an adjacent slaughter-yard, burst the back door and filled the hall to the depth of several inches. By the help of a plank and some stepping stones, which I procured for that purpose (for the inhabitants without any concern waded through it) I reached the staircase. It had rained violently, and from the shattered state of the roof, a torrent of water made its way through every floor, from the garret to the ground. The sallow looks, and filth of the wretches who crowded round me indicated their situation, though they seemed insensible to the

In this town *(Manchester)* we should not find many in circumstances such as these; but whoever will take the trouble to visit the cellars, garrets, and purlieus, generally, of Cock Gates, Fennel St. Long Millgate, and other of the older parts of Manchester, will discover a denseness of population, and some of its *peculiar accompaniments* which he may have imagined were not to be found out of the Liberty of Dublin.

In a community subsisting wholly by trade, a variety of unfavourable circumstances affect the children of the poor, some of which are in their nature unavoidable, and others (by far the worst) spring from vices that are always prevalent in a crowded state of society. Drunkenness, and disease the consequence of licentiousness, affecting the female part, will extend to their offspring; and the frequency of illegitimate births, where the parties are too depraved to submit to the duties

stench which I could scarce sustain for a few minutes. I counted in this sty thirty seven persons; and computed that its humane proprietor received out of an absolute ruin, which should be taken down by the magistrates as a public nuisance, a profit rent of above £.30 per annum, which he exacted every saturday night with unfeeling severity. I will not disgust the reader with any further detail, and only observe, that I generally found room-keepers of this description, notwithstanding so many causes of wretchedness, apparently at ease, and perfectly assimilated to their habitations. Filth and stench seemed congenial to their nature; they never made the smallest effort to remove them; and, if they could answer the calls of hunger, they felt, or seemed to feel, nothing else as an inconvenience."

of a parent, is, perhaps, beyond all others the most fertile source of infantile destruction.* Moreover, early marriages, though they cannot be called vicious, are always common where the means of subsistence fluctuate between extremes. Their effect is to produce feeble children, and afterwards to starve such of them as might, under other circumstances, be reared.

But without adverting to the vices of the poor how often do we see the mother of a large family obliged to follow some employment besides the care of her household; and that too at a distance from home! Meanwhile her children are unavoidably neglected. Besides, the abject poverty from which those who subsist by manufactures are never long exempt, occasionally renders it impossible for the poor to feed and clothe their families in a manner compatible even with ordinary health. To such causes of debility and disease, when we add filthiness, impure air, want

* In this country it is not easy to ascertain what proportion the illegitimate bear to the legitimate births. I have been politely furnished with a list of the filiations of illegitimate infants for the township of Manchester from July 1823 to December 1826. They amount to 1001 or about 300 per annum. The population of the township is 108000, and the births at the rate of 1 to 30, are 3600; of which number therefore about 1 in 12 is illegitimate. In all Sweden and Finland such births, to those in wedlock are as 1 in 20; but in the city of Stockholm, 1 in 3. In all France on the average of several years following the revolution they were as 1 in 11; and in Paris for the years 1820 1821 & 22, they were something above 1 in 3, being full 36 ℔ Cent.

of exercise, the great liability to infectious complaints, at a very early age, in crowded neighbourhoods, mismanagement in health and sickness, especially the shocking practice of administering spirituous liquors even to infants at the breast,* and want of medical treatment, we readily perceive why infantile mortality is greatest where the poor are most numerous; and that it must

As to the mortality of the illegitimate it is known to be immense. Taking the general average, it appears that in Gottingen 3 per cent. of the children born in wedlock are born dead; but out of wedlock so many as 15 per cent. In Berlin, the proportion is less: in 1819 and 1822, of the births in marriage, the still born were 1 in 25; out of marriage 1 in 12. The mortality among illegitimate infants, born alive, compared with the legitimate, is likewise proportionally great, "For 10 legitimate children who die in the first month, there are lost 24 natural children. In the 2nd & 3rd months the proportion is 2 to 1. In the second quarter, it is one and three quarters to 1. In the two remaining quarters of the first year, one and a half to one. In the 2nd year one and two fifths; in the third and fourth one and a third; in the 5th 6th & 7th one and a fourth; and of the total number of natural children only one tenth or one ninth pass the age of puberty.—See CASPER's Medical Statistics in the Edin. M. & S. Jour. No. 88.

* The evil alluded to is extremely prevalent among the more ignorant and stupid of the poor. The instant a child becomes indisposed, gin or rum is their ordinary remedy. But the practice is not limited to cases of sickness; a friend of the writer, on whose report he can rely, was lately informed by the landlord of a noted DRAM-SHOP in this town that he was in the daily habit of seeing mothers pour undiluted spirits into their infants, "sometimes," as he expressed it, "till they became black in the face." If they shewed much aversion to the experiment, which was sure to be the case with the very young, THE FINGER DIPPED IN THE LIQUOR was first given, till THE TASTE for it was acquired!

increase in manufacturing districts, *cœteris paribus*, in the ratio of the increase of the operative population.*

This latter fact, which is obvious, seems in a great measure to have escaped the late DR. WATT of Glasgow. In commenting on the mortality bills for that city, he expresses himself "as utterly astonished to find the number of deaths under 10 as great in 1812 as it had been in 1783 in spite of vaccination and all other improvements." He appears to forget that, within that period, Glasgow had doubled its population; and, in all likelihood, trebled its operative class.†

In stating the causes of infantile mortality in large towns, our remarks need not be confined to

* According to a Memoir by VILLERME relative to the mortality of the different ARRONDISSEMENTS of Paris; "it appears that, in the quarters occupied chiefly by the rich, the annual mortality is so low as ONE in 43 or even 45; that, in those inhabited chiefly by the poor, the average is so high as ONE in 25 or 24; and that the proportion, in the other parts of the City, observes nearly the ratio of the wealth and consequent ease of the population.—
Edin. Med. and Surg. Journal, 1826.

† I have thought it unnecessary to advert to the supposed effects of Cotton Mills, and similar establishments, on the health of children, who are now seldom admitted into any great public works but at an age, between which and puberty fewer deaths occur than during any other period of life. It is a curious fact that the number of deaths between the ages of 5 and 10 years is little, if at all, greater in manufacturing towns than in the country. The reason is, that in the former most of the sickly and feeble die in the few first years of life, consequently only the vigorous, in general, attain their 5th year and above.

the poor. Among the rich, some of the same causes operate also with fatal effect, and none more than impure air, and want of due exercise. In Manchester where there are no public walks within the range of the town, these evils are severely felt, and that without the prospect of remedy. Here new streets are rapidly extending in every direction; and so great already is the expanse of the town, that those who live near the centre find it inconvenient or impossible to send their children, daily into the pure air. It is true, that nothing contributes more to the salubrity of a town than to allow the utmost freedom in extending its limits. In that case, the streets will be spacious, the buildings of moderate height, and a freer circulation of air maintained throughout: yet even the liberty to build, and to extend, with all its advantages, may be abused; which it certainly is, when no public walks are reserved for the accommodation of those who live in the central parts. In this respect, Manchester is notoriously defective; perhaps more so than any town of equal magnitude in Europe. Although its total annual mortality is not excessive, yet the proportion of children's deaths is so, and this may depend, in no small degree, on a circumstance, which, unlike some other causes of disease, is not occasionally, but continually operating:

I allude to the local defect in the means of taking regular exercise in the open air.

To shew how rapidly large towns would become depopulated, were they not constantly recruited by migration; and how fatal they prove to human life, even in circumstances otherwise the most favorable to its preservation, DR. PERCIVAL procured an account of the mortality occurring in the society of Friends in Manchester during 7 years. In this society he found there were 81 males and 84 females, of whom 54 were married, 9 were widowers, 7 widows, and 48 under 15 years of age. The births in 7 years were 34, the burials 47; *one* person, therefore in 24.6 died annually. The result is curious, and the reverse of what was to be expected.

Dr. P. ascribes so high a rate of mortality, proportionally higher than that of the whole town, to the Society, during the above period, having had little or no accession to its number of members from the country. Indeed, without a constant supply from this source, there is reason to believe large towns would be depopulated at even a speedier rate than in the instance just given.*

* Being curious to compare the present rate of mortality in the society of Friends with Dr. Percival's estimate of it in 1774, a gentleman a member of that body, very kindly furnished me with the following statements, embracing a period of nine years, from 1817 to 1825 inclusive.

We have seen from the tables how much less is the percentage of deaths under the age of 10 in a country parish than in a town or city. To perceive the *actual* difference, however, between the two, with respect to the amount of infantile mortality, we must consider, that, as the mortality *at all ages*, in a country parish, is so much smaller in proportion to the population than it is in a town, were the deaths in the tables under 10 even the same in both, still the *actual* mortality under this age would not be so; it would be greater in the latter than in the former in the ratio of the mor-

	Members.	Male.	Female.
In the beginning of 1817.	391	185	206
At the end of 1825	489	226	263

Mean number of members....440.

Total births during the 9 years 106. Burials in the same period 70. Under 2 there died 19; between 2 and 5, 5; between 5 and 10, 2; above 10, 44;—in all 70. Annual average number of deaths, 8 nearly; or in the proportion of 1 person out of every 55.

Here we perceive the annual mortality is not near one-half of what it was 52 years ago; a prodigious difference truly, not to be accounted for merely on the ground of the rapid increase of the society during the nine years, although that was great; nor on the score of greater cleanliness and comfort among its members than obtained in Dr. Percival's time; for in these respects there is probably no change; neither can we imagine any considerable alteration in the town as regards its salubrity. I am inclined to think that this diminished rate of mortality depends, 1st on the rapid increase of members partly by migration from the country. 2nd on the habitations of the members being now, generally, either out of town, or in the most airy and salubrious parts of it. And, lastly, on the decided advancement which has taken place since Dr. P's day, in the knowledge and treatment of diseases.

tality *at all ages.** To illustrate this point let us take as an instance the Glasgow and Ackworth tables, and assume that the percentage of deaths under 10 is the same in each; it will not thence follow that as many children proportionally die in the one place as in the other: on the contrary as in Glasgow *one* in 40 of the inhabitants dies annually, and in Ackworth only *one* in 56; the deaths under 10 in the latter will be fewer in the proportion which 40 bears to 56 or 5 to 7. Dropping the assumption of an equal mortality under 10, in the registers of the two places, we find that in Glasgow it is 54.75, and in Ackworth only 27.33, which (omitting the fractions) gives a difference of *one-half*. Adding the two results together we find that out of the same number of inhabitants about *three* children die in Glasgow for *one* that dies in the country parish of Ackworth.

In some of the Welsh counties, Anglesea for instance, where the annual mortality is only 1 of 71.62, the deaths in infancy will probably be fewer even than in Ackworth.†

*It is here assumed that the state of the population in country parishes and in towns, is the same in respect of the numbers living above, and under, ten years of age.

† The following statement of the comparative mortality in England and Wales, is extracted from Milnes's work on Annuities &c.—In the ten years preceding 1811, there died annually, in all England, 1 of 47.30. In all Wales, 1 of 58.57.

SECTION V.

ON THE COMPARATIVE MORTALITY OF CHILDREN BEFORE AND SINCE THE COMMENCEMENT OF THE PRESENT CENTURY.

It is a question of much interest, and one that of late years has been frequently agitated, whether, since the introduction of vaccine inoculation, infantile mortality has sensibly diminished. Dr. Watt, in an appendix to his work on Chincough, has entered fully into the subject, and has drawn conclusions opposed to the idea so generally entertained, that the extinction of Small Pox must contribute to the increase of population. Sir Gilbert Blane, in a paper published in the Medico-Chirurgical

	Employed in Agriculture	In Trade or Handicraft	Otherwise.
In all ENGLAND of every 100,000 families	34,653	45,895	19,452.
In all WALES.....	56,141	27,728	16,081.

No doubt one cause of the superior healthiness of Wales, besides the high proportion of its agricultural population, is the small number of its towns; the largest (Swansea) contains only 8500 Inhabitants.

Transactions, appears, in some measure, to favor the opinions of this author.*

The manner in which Dr. Watt was led into the inquiry seems to have been this. In order to ascertain some points relative to the mortality from Chincough, he examined the Glasgow parochial registers from 1783 to 1812.—"When I commenced this investigation," says he, "I was struck with the immense numbers carried off yearly by Small Pox. This led me to calculate the great saving of life that must have arisen from the vaccine inoculation. At this time above 15 *thousands* had been publicly inoculated at the Faculty Hall, and perhaps twice or thrice that number in private practice. I remarked, too, that the deaths by Small Pox were chiefly in infancy, hence the deaths under 2 or 3 years bore a very great proportion to the whole deaths in the City. Taking an average of several years, I found that more than half of the human species died before they were 10 years of age, and that of this half more than a third died of Small Pox; so that nearly *a fifth* of all that were born alive perished by this dreadful malady.

I began to reflect 'how different the case must be now!' To ascertain the real amount of

* See Medico-Chirur. Trans.—Vol. IV.

this saving of infantile life, I turned up one of the later years, and by accident that of 1808; when, to my utter astonishment, I found that still half or more than half perished before they were 10 years of age. I could hardly believe the testimony of my senses: I therefore began to turn up other years, when I found that in all of them the proportion was less than in 1808, but still, on taking an average of several years, it amounted to nearly the same thing as at any former period during the last 30 years. This was a discovery I by no means expected; and how it could have come to pass appeared to me inexplicable." A little farther on he says, " as no new disease has appeared, the deficiency occasioned by the want of Small Pox must have been made up by a greater mortality among the other diseases of children &c."

Before examining the reasoning advanced in this extract, it is necessary to advert to an error of Dr. Watt's, which affects most of his conclusions. In comparing the deaths under 10, in 1812, with what they were 20 or 30 years previously, and drawing the inference that they remained as great as before, he evidently refers to the percentage of deaths under 10 in the registers, at the particular periods, and not to the *actual* mortality under this age,—that is, the

number of deaths compared with the population, which, as we have before shewn, is very different and ought not to have been omitted.

Keeping this distinction in view, we may now revert to the Glasgow mortality bills from an examination of which Dr. Watt drew the particular conclusion that has been stated. In the year 1783, or rather in the first period of his table,* the percentage of deaths under 10 for Glasgow is 53.48; and the annual mortality of the inhabitants at all ages 1 in 26.7. In the 5th period, which includes the 6 years preceding 1812, the percentage of deaths under 10 is 55.49 and the annual mortality at all ages 1 in 40.8. Here the *relative* proportion of deaths under the *tenth* year is greater in the period of 1812 than in that of 1783; and yet, on account of the very diminished ratio of the annual mortality of that City, the *actual* mortality under 10 in 1812 is nearly *one third* less than it is in the period for 1783.

That the *actual* mortality under 10 is universally less than it was 25 years ago, even allowing that the percentage of deaths under this age, in the registers, remains the same, there are convincing proofs, which depend upon the acknowledged fact of the mortality, compared with

* See the Table referred to—page 16.

the population, being every where diminished.* The instance just given, that of Glasgow, is to the point; and, were it necessary, many others might be adduced. In Warrington, for example, between the years 1773 and 1780 the mortality of the inhabitants was 1 in 26.48; on an average of the last 8 years it has fallen to 1 of 37.40; and, as the number of deaths under 10 has also fallen more than 10 per cent. in the registers during the same time, the reduction in children's deaths, in that town, is very great. In the 22 years preceding 1800 the average annual mortality in Carlisle was 1 in 40.09. In the 10 years commencing with 1801 it had diminished to 44.30, and in 1814 it was still lower, being 1 in 46.

The London tables likewise, on this point, afford data equally gratifying and conclusive. So great an increase in the value of infantile life does not depend alone on vaccination, but upon many causes of which, nevertheless, vaccination is the most important. Of the other causes, improved habits of living, and cleanliness among the lower orders; the more enlight-

* On the average of the six years preceding 1803, 1 of 43.666 died annually in this country; but on the average of the ten years preceding 1811 the mortality had fallen to 1 of 47.697. This improvement MILNE ascribes principally to vaccination. In 1821 the annual mortality was found to be diminished to 1 of 52.17.

ened domestic management of the sick, particularly in *febrile* cases, and better medical treatment are the most remarkable.*

In France it would appear that the decrease of mortality under the age of 10 is not less than with us. In 1780, 50 per cent. of the children died within two years. In 1825 it was reduced to 38.3. In the former period 55.5 died under 10, in the latter 47.7 only. Of a hundred births only 21.5 formerly attained the age of 50; the number is now increased to 32.5.†

* The following summary exhibits the progressive improvement which took place in the management of puerpural women and their infants, during the last century, in the British Lying-in Hospital. The reduction of mortality as respects BOTH, strikes me to be unaccountably great.

YEARS.	PROPORTION of DEATHS.	
	OF WOMEN.	OF CHILDREN.
From Nov. 1749 to Dec. 1758	1 in 42	1 in 15
„ „ 1759 to „ 1768	1 in 50	1 in 20
„ „ 1769 to „ 1778	1 in 53	1 in 42
„ „ 1779 to „ 1788	1 in 60	1 in 44
„ „ 1789 to „ 1798	1 in 288	1 in 77
In „ 1799 and „ 1800	1 in 913	1 in 115

WILLAN on the Diseases of London.

† *Archives Générales de Médicine, Mars* 1826.

SECTION VI.

ON THE QUESTION "ARE INFANTILE DISEASES IN GENERAL, AND ESPECIALLY MEASLES, BECOME MORE FATAL SINCE THE COW POX WAS SUBSTITUTED FOR SMALL POX?"

It is a remarkable fact, that since the introduction of vaccination, the mortality in the registers has become less under the age of 2 years, and proportionally increased between 2 and 10. The following table, drawn up from Watt's Glasgow bills for the 30 years preceding 1812, and the London bills for the 35 years preceding 1820, is conclusive upon this point. Assuming that vaccination became general in both cities by the year 1800, I have divided the table accordingly.

DEATHS

		Under 2 Years	*Between 2 & 10*
Before	1800	37.01	14.86
Since		30.99	16.59

How are we to account for this variation? Dr. Watt was of opinion that the lives we now

gain from the Small Pox under 2, we lose by Measles and other complaints between 2 and 10: but this is to take for granted that the mortality under 10 continues as great as before the vaccine era, an assumption which has not only been shewn to be incorrect; but that, on the contrary, the mortality under this age is now universally less.

It is well known that in former times Small Pox committed its ravages principally on those under and about the age of 2. *Now* that its prevalence is so much diminished, the 4th and 5th years are more generally attained; at which periods and above, the number of children alive being of course much greater than before; measles, chincough, scarlet fever, croup, and other complaints (generally later than Small Pox in making their attack) find proportionally more victims. That such is the only rational explanation of this curious change in the rate of infantile mortality will hereafter appear.

As to the interesting query which heads the present section, it has been frequently discussed. It was first broached by DR. WATT of Glasgow; and afterwards taken up by SIR GILBERT BLANE, MILNE, the EDITOR of the Edinburgh Medical and Surgical Journal, and by several foreign writers, particularly DUVILLARD. DR.

WATT imagines that when the Small Pox was in full force, it had the power of modifying Measles, and rendering them mild; but that now as Small Pox is nearly extinct, Measles are become as dangerous as the former used to be. "I have," says he, "supposed that the constitution is improved by Small Pox; certainly not by imparting a greater proportion of health than was originally assigned to the individual, but perhaps by eradicating certain unobserved deviations from health, which, if not early removed by the accession of some acute disease, would have proved the seeds of early mortality, by gaining a deeper hold of the constitution before the Measles and other epidemics, which are generally later in their appearance, come round." That the number of deaths from Measles has really increased since vaccine inoculation was introduced, there can be no doubt, as the following Tables shew:—

GLASGOW.			LONDON.		
SMALL POX.		*Measles*	SMALL POX		*Measles*
From 1783			*From* 1785		
to 1788	19.55	.93	*to* 1791	8.05	1.59
to 1794	18.22	1.17	*to* 1798	9.45	1.26
to 1800	18.70	2.10	*to* 1805	7.55	2.39
to 1806	8.90	3.92	*to* 1812	6.21	4.86
to 1812	3.90	10.76	*to* 1819	3.54	3.99

Here we perceive, in casting the eye down the parallel columns of figures, that, as the deaths from Small Pox diminish, those from Measles increase; not in the same ratio, it is true, but still in a surprising degree. We have seen how DR. WATT would account for the fact. SIR GILBERT BLANE, alluding to the sentiments of the former, remarks,—"Every reader will judge for himself. I own that I think it will be difficult to account for the great increase of the mortality, from Measles, as shewn in the table, [DR. WATT'S] without admitting the truth of the discoveries alleged to have been made at Glasgow." MILNE, in his excellent work on Annuities &c., expresses himself so as to imply the same opinion. DR. WATT'S sentiments, be they erroneous, or otherwise, have certainly impeded the progress of vaccination in this country, not so much perhaps among medical men, as in society generally, where, along with other arguments, against the Cow Pox, the notions in question are advanced as of much weight. That their author, in promulgating them, was actuated by the best intentions, cannot be doubted: indeed, in all his works, industry and candour are equally conspicuous; on which account, his opinions on the present subject are entitled to careful and impartial examination.

That the natural Small Pox, when in full force, improved the constitutions of such as recovered from its attack, and thereby rendered them less liable to, or better able to withstand, other diseases, is at least a questionable position. It is true that after recovery from any acute disorder, if that recovery is in all respects perfect, the health will generally be improved, and the person for a time—it may be for a long time—rendered less obnoxious to disease. That even this may happen after Small Pox, is to be admitted, though the contrary will more commonly be found true: indeed no fact is better established than the great tendency of Small Pox to call into action the most latent predisposition to Scrophula, even in cases where no taint of this kind had been suspected to exist. In this way Small Pox has injured the constitutions of thousands who seemed to be recovered from its more immediate effects. A writer, in concluding his account of a variolous epidemic, observes that "great numbers whom the disease did not deprive of life, were much disfigured, and rendered irrecoverable invalids. In some were hideous scars; in others the eyes, ears, and mouth were destroyed; some were lame from inveterate ulcers, others laboured under *pernicious internal disorders;* and *it is certain that water in the head has*

suddenly destroyed many who seemed to be recovering from the most benign Small Pox."* If such be the case, and the experience of almost every individual supplies him with similar examples—the notion that "Small Pox, when in full force, improved the constitution," however true it might be in particular instances, as a general rule, cannot for a moment be admitted. I am inclined to think that the truth lies in an exactly opposite conclusion; and that one considerable cause of the decrease of mortality of late years in every part of the kingdom, is the comparatively greater soundness of constitution enjoyed, since Small Pox has given way to so benign a substitute as the vaccine vesicle.†

* SAUNDERS on the Small Pox.

† It has occurred to me, on considering how often the Scrophulous Diathesis is called forth by the variolous disease, whether, when the time arrives that we can feel the full benefits of vaccination, (if such there be) at ages so high as between 30 and 50, consumptive diseases will not be found to decrease. The next 20 years will shew how far there is truth in this conjecture. The following is an estimate of deaths from Consumption, taken from the London bills. Dividing the last century into three periods, the number in each period stands in the following proportions:—

Beginning.			Middle		End.
3000			4000		5000
In 1699	1	in	6.5	died of Consumption.	
„ 1749	1	in	5.5		
„ 1799	1	in	3.8	In this calculation the Bill for	
„ 1808	1	in	3.6	1822 has been omitted as the	
„ 1818	1	in	4.2	Writer unluckily could not	
„ 1825	1	in	4.5	meet with it.	

Recurring to the fact, which the tables prove, that more die of Measles *now* than died formerly and that this change appears to be an effect of vaccination, does it follow that Measles are in their nature become more severe and fatal? Dr. Watt, Sir G. Blane and Mr. Milne agree in the affirmative; the proofs they bring forward, however, are by no means satisfactory.

It is not enough to shew that more die of Measles at present, than died previously to the vaccine period—a consequence to be expected, owing to the diminished mortality from Small Pox. It should also be shewn that of a given number of cases of Measles, a greater proportion dies now than died any time "when Small Pox was in full force." Facts of this kind are not adduced, and had there been such, in the possession of these gentlemen, we may presume they would not have been withheld,

The real cause of the increased mortality from Measles and other infantile complaints may receive elucidation from the following considera-

It is to be observed that Small Pox and Consumption were both gradually on the increase during the whole of the last century. Ever since 1808 the deaths in London from the latter disease have been decreasing, so, of course, has the prevalence of Small Pox.

Part of the foregoing table is extracted from Bateman's work on the diseases of London.

tions. Small Pox, owing probably to the greater abundance and virulence of its effluvia, was generally caught in a casual way, before Measles and other infectious complaints, and swept off the more feeble and sickly, leaving the strong and vigorous *only*, to encounter the attacks of other diseases. There are curious facts to illustrate this opinion, which we shall notice presently. In order to understand the subject aright we must take into consideration that every child comes into the world susceptible of disease. As to the degree of individual susceptibility, there will be a difference, both as respects particular diseases and disease in general, depending at first on peculiarity of bodily structure, and afterwards modified by external causes. Such being the case, *that* infectious febrile disease, to which in early infancy there is the strongest predisposition, will of course in general make the first attack, and prove the most fatal of any. The predisposition to Small Pox, and its ravages in the first months of life are well known, and agree with what has here been supposed. In former times so completely did a variolous epidemic clear the field of all the feeble and predisposed under the age of 10, but more especially under 2 or 3, as occasionally to leave scarcely any in

the town or district where it prevailed, to perish by other diseases.*

In Warrington, during the year 1773, the total number of deaths was 473; of which number 211 died of Small Pox, all under the age of 9; 133 under 2 years; 33 between 2 and 3; 33 between 3 and 5; leaving only 12 as occurring between 5 and 9. I have not been able to learn what proportion of the deaths was under 10: but taking it at 54 per cent., about 45 would be from Small Pox, leaving only 9 per cent. of the deaths under this age as the effect of all other diseases. The fact is still better illustrated, and without the necessity of conjecture, by the report of Dr. Haygarth of Chester. In the year 1774 the deaths in that city were 546, of which 334 or 46.22 per cent. were under 10. Of the diseases producing these latter deaths, Small Pox caused 202: 89 were under 2 years, 91 between 2 and 5, and 22 between 5 and 10: thus leaving only 32 of all the deaths under 10 years of age assignable to other complaints.

* Admitting, for argument's sake, what has not hitherto been proved, that out of a given number affected with Measles, a greater proportion dies now than died formerly; it would not follow that this was owing to the want of the modified constitution alleged to be an ordinary effect of the Small Pox. It might be accounted for on the probable supposition that many unfavourable subjects are attacked with Measles in the present day, who formerly would have fallen the ready victims of Small Pox.

More instances might be adduced; but the above shew us satisfactorily why Measles, when "Small Pox was in full force," had comparatively few victims; and why, when they now prevail epidemically, they, as was the case with Small Pox, are caught at an earlier age than other diseases in general, and prove so very fatal; which happens not more from their priority in attack, than from being in their nature what they were ever considered—a severe and dangerous disease. We are to recollect however that the Measles do not in general attack at so early an age as Small Pox; nor ever, like the latter, destroy eight or nine tenths of all the children that die in the place where they happen to prevail, as was the case in the variolous epidemics of Chester and Warrington: consequently we have reason to hope that neither Measles nor any other infantile disease, will, as Dr. Watt imagined, "come to occupy the place which Small Pox once occupied." And there can be no rational doubt that the complete expulsion of this loathsome scourge from our soil, as it has been expelled from other countries, would be fraught with the weightiest benefits to society without one disadvantage.*

* While on the Continent vaccination is every where justly appreciated, and its adoption insured by judicious laws, in this country there is reason to fear it is rapidly losing

SECTION VII.

THE COMPARATIVE MORTALITY OF THE SEXES INCLUDING THE STILL-BORN.

It is a curious but well authenticated fact that more males are born than females; and, as might be expected, such being the case, more males die under the age of 10 than of the other sex.

ground. Whether it be that the Medical Police of other nations is not suited to the genius of our own, or that it is deemed unnecessary, I pretend not to determine; but true it is that the RIGHT of the Subject to maintain and propagate Small Pox Infection in every part of these Kingdoms, remains inviolate, and, judging from the practice of many, is in no danger of becoming obsolete.

In Manchester vaccine inoculation has been on the decline for several years, owing, partly, to doubts very generally entertained as to its antivariolous efficacy; but chiefly to the apathy of the poor, many of whom are regardless of the future, and scarcely to be induced to comply with any thing really beneficial to themselves and families. No doubt the unsettled state of medical opinion on the cow pox question tends also to increase the prejudices and perplexity of the public.

From May 1815 to the same month in 1823, 2667 married women, on an average, were annually delivered by means of the "Manchester Lying-in Charity," and during the same period, 1392 infants were annually brought to the Hospital for vaccination, leaving (on the supposition that a live child was the produce of each delivery, and lived till of an age to be vaccinated) 1275 that had not undergone vaccination. This deficiency may be supposed to have been counterbalanced at

In the Liverpool registers, for 12 years in the present century, I find the male births to be 27,959; the female births, 24,020; giving a balance of 3,939 in favor of males. In Warrington, during 8 years, there were born 2,016 males, and 2,001 females. In England and Wales, on an average of 29 years, for every ten thousand females, there were 10,426 male births.

the Infirmary, where, during the above 8 years, there were 1769 annual vaccinations, which being added to those at the Lying-in Hospital, made the total number of children vaccinated, each year, at the public expense, 3161, or 495 more than the number of pauper births.

From May 1824 to May 1826, however, the annual number of deliveries by the Charity was 3285, while the vaccinations at the Lying-in Hospital and the Infirmary together were only 1309 per annum, leaving in these two years, out of 6570 births, 3952 infants who were not vaccinated at the public institutions.

There are druggists in various parts of the town who, it is said, vaccinate great numbers of children gratuitously. I see no cause, however, for believing that these operators do more in this way of late than formerly; the following facts render even an opposite conclusion probable—facts that reflect deeply on the intelligence of our population, but which are important as proving, in a negative sense, the incalculable value of the vaccine discovery. From the accurate register at the Rusholme Road cemetery, it appears that, during six months of the last year (1826) from June 18th to the 18th of December, ONE HUNDRED AND TWELVE PERSONS, who died from SMALL POX, were interred in that place. Of these, none were above 7 years old, few above 5, and the greater part under 2. I am assured by the Rev. W. M. Walker, the Registrar, that, inquiry having been made in every instance, it was found that NOT ONE OF THE ABOVE 112 CHILDREN HAD BEEN VACCINATED. As only about a fourth of the interments in Manchester takes place at this burial ground, the mortality from Small Pox, in the town generally, during the past year, must have been very great; not greater, however, than was to be anticipated from the numbers suffered to remain unprotected by vaccination.

By a late report of the population in the Low Countries* it appears that there, the births of boys and girls are more equal, being in the proportion of 1000 to 947. In France it is 1000 to 938, and in the kingdom of Naples the proportion is 1000 to 956. The same in a greater or less degree holds good wherever the subject has been investigated.†

In London, the deaths from Small Pox, according to the annual report of the vaccine national board for 1825 were extremely numerous. Of the cases admitted into the Small Pox Hospital 41 in the hundred terminated fatally. This presents a melancholy contrast to the accounts from places abroad. In Berlin, during 1821 and 22, only one died of Small Pox in each year. In the German States, vaccination has become universal, and in them, as well as in various other countries, the Small Pox is almost or wholly unknown.

Before concluding this note, I would suggest, for the consideration of the public,—1st. That all who recommend patients to a Lying-in Charity should make it their business to see that the infants of such patients, are taken to be vaccinated within six weeks after birth. 2ndly. Whether, in every large town, it would not be advisable to set on foot a general pauper vaccination, similar to that which was practised in Norwich in 1813, when great numbers of the poor, in that city, were induced by a trifling gratuity to submit their children to this operation. 3dly. Whether it is probable that the practice of vaccine inoculation will ever become universal in this country, till an Act of the Legislature is obtained to enforce it? Near 30 years' experience has surely afforded sufficient evidence in the negative.

* Annales des Sciences Naturelles.—1826.

† When men, even the most enlightened, have a theory to support, it is surprising how easy of faith they are respecting the facts which are supposed to favor it. About the middle of last century, when it was the fashion to argue for the lawfulness of polygamy in warm climates, it was asserted that in all intertropical countries more girls are born than boys. Were such a circumstance true, coupled with the

As all the above calculations are made from baptismal registers, and as more males than females are still-born and die before baptism, the difference in their respective mortality will be even greater than has been stated.*

By the still-born are to be understood such children as have been alive, but died before, or at, birth. From these are to be distinguished abortions, or such as have never quickened. Two elaborate papers already referred to, the productions of DRS. CLARKE and BLAND, contain much curious information on this subject. Of 1923 children born at the Wesminster Lying-in Hospital, DR. BLAND reports that 972 were boys, and 951 girls; or in the proportion of 46 to 45. 1 in every 241 was deficient or mon-

fact of the greater mortality of males than females, a strong case would be made out on behalf of Eastern polygamy. The law of nature however, relative to the greater proportion of male than female births, has been ascertained to be the same in every climate.

* It is probable that this curious difference in the proportion of male and female births depends, in some measure, on the age of the parents; as, from a variety of facts, it would appear that the younger they are, the higher is the proportion of female offspring. In all the illegitimate births in Sweden and Finland, during 20 years, and in Montpelier, during 21 years, the males and females were nearly equal. For obvious reasons the parents of such children will in general be considerably younger, than the parents of such as are born in wedlock. In Wales, where marriages are contracted later in life than in England, the proportion of male births to female is much greater than in the latter.

See MILNE on Annuities, &c.

strous;* and 1 in 23 still-born. Of the latter 49 were boys, and 35 girls. Taking the abortions and still-born together, 1 in 8 died before, or in, coming into the world.

Dr. Clarke gives the result of tables kept at the Dublin Lying-in Hospital for 27 years,—from 1757 to 1784. In that period were born 20,117 children, of which the males were to the females in the proportion of 9 to 8; and 1 in 30 was still-born.

In the British Lying-in Hospital, during 52 years, the Tables exhibit facts nearly agreeing with those already given. Of 26,513 births, the boys were to the girls as 19 to 18, and the still-born 1 in 25.†

* A Parisian professor has furnished an account of the cases of deformity which occurred at the Hospice de la Maternite, during 5 years. Out of 23,283 infants, 37 had club feet; 34 some mal-formation of the head or vertebral column; 29 had hair lip; 5 some affection of the lower belly and neighbouring parts; 9 deformity of the hands or feet; 4 had different kinds of tumours; 4 the anus imperforate; 4 marks on the skin more or less large; 2 swelling of the legs and feet. In 2 the forearm was wanting; one was born with rickets well marked; one with the thigh out of joint; one with the limbs stiff; and another with the left leg emaciated and too short. One only had the right ear malformed; one the eyes wasted; one the cornea opaque. Besides 2 infants were born with two heads, four arms and four legs. Of all these cases, (139 in number, or 1 in 167.5 of the births) more were males than females.—See Friedlander de l'education physique de l'homme,—1815.

† The still-born compared to the live births, are stated to be, "1 in 24 for London and Vienna; 1 in 36 for Stockholm; 1 in 19 for Dresden; 1 in 33 for Brunswick; 1 in 15 for Hamburgh; 1 in 19 for Paris; and so high as 1 in 11 for Strasburg."

In the Venereal Hospital at Paris, the proportion is 1 in 7; and in a similar kind of Hospital at Hamburgh 1 in 3.

Casper's Medical Statistics,—Edin. Med & S. Jour. No 88.

The chief object of DR. CLARKE, in his paper, is to investigate the causes of this disproportionate mortality of males over females before and after birth.

After great minuteness of detail and illustration, he comes to the conclusion, that the male fœtus being larger and heavier than the female, requires more nourishment *in utero*, and encounters greater difficulty in the birth. Hence, when it happens that the mother is sickly or distorted, the male fœtus will be sure, in either case, to suffer more than the female.

In this solution of the matter there is much plausibility, and no doubt some truth, as far as regards the greater hazard of males than females up to, and at, birth, or even for a short time after; but why the same law of mortality should continue, not only in youth, but throughout all the stages of life, is a problem which, in my opinion, remains yet to be solved.*

* The following estimate of the comparative mortality of males and females above the age of 9 years is taken from the Swedish Tables. If its accuracy may be depended upon, it is highly interesting. "The difference is very small from the entrance on the 9th to the completion of the 20th year. It then increases till 25; from thence it again decreases till the 32nd or 33d year; increases again till the 39th and 40th where it falls as low as it was in the 32nd. After that it becomes greater than at any earlier age except the first year; and continues greater till the end of life."

MILNE on Annuities.

As to the mortality of the sexes after birth, a few examples will suffice to illustrate the subject. Of the 20,117 births in the Dublin Hospital, 10,647 were boys, and 9,470 girls. At the end of a fortnight the balance in favor of boys, originally 1177, was reduced to 483, being a greater loss of males than females within that period by 694.

The following table is constructed from the Northampton, Chester, and Warrington bills of mortality. It requires no comment. Of 3894 deaths under 10 years of age there were,—

Under	1	*month*.....	239	*males*.....	161 *females.*
,,	1 & 2	,, ...	127	,, ...	91 ,,
,,	2 & 3	,, ...	78	,, ...	61 ,,
,,	3 & 6	,, ...	135	,, ...	147 ,,
,,	6 & 9	,, ...	160	,, ...	157 ,,
,,	9 & 12	,, ...	153	,, ...	194 ,,
			892		811

SECTION VIII.

ON THE RATE OF INFANTILE MORTALITY AT DIFFERENT SEASONS OF THE YEAR.

Ever since the days of Hippocrates, and probably before, the seasons have been supposed to exert considerable influence on the physical condition of the body, and each season an influence peculiar to itself. "Spring," says Celsus, "is the most healthy, Winter the next in salubrity, Summer less healthy than either, Autumn the most perilous of all." In the present day, the same opinions generally prevail, erroneously, there can be no doubt, as regards the latitudes of Britain, though they are still applicable, perhaps, to the climate of Italy.

After all, the influence of season in our own country is somewhat uncertain, and not of the importance usually attached to it. In the same town or district, we often find the rate of mortality to vary greatly, in the same months of different years, which obliges us, when we draw

any general conclusion on the subject, to take care that it be on an average of many successive years.

The causes of this variation and uncertainty are obvious; they depend not only on the nature of our climate, but also on various local and temporary circumstances. In times of prosperity and plenty, when all have the means of comfortable living, and defence from the rigour and vicissitudes of the seasons; or, when the reverse is the case, as respects the lower classes; the mortality in Winter for instance will be modified accordingly, irrespective, in a considerable degree, of its severity or mildness.

Again, in this climate, infectious diseases prevail at all seasons; and when they rage epidemically, often raise the mortality highest in those very months in which it would otherwise be lowest.

There is a popular adage, "a green Winter makes a fat church yard;" the soundness of which, out of the profession, is universally credited. Of late years several Physicians of eminence* have condescended to prove its incorrectness. Their success, however, has been

* Heberden, on the increase and decrease of diseases; Bateman, on the diseases of London; Willan, on the diseases of London; Woolecombe, on the increase of certain diseases, &c.

but indifferent. In a paper by DR. HEBERDEN, first published in the Philosophical Transactions, and since made part of a separate work, the fatal effects of *intense* cold, particularly on the aged and the very young, are treated of and illustrated in an interesting manner. But the truth or incorrectness of the adage is not to be settled by facts of this description, which no persons, I suppose not even the vulgar, ever disputed.

It appears, according to DR. HEBERDEN, that the month of January in the year 1795 was the coldest, and the same month in the following year the warmest, that are known to have been experienced in this country. In the former, the number of deaths in London was 2823, of which 717 were above 60 years of age; and 617 infants under 2. In the following January, the total number of deaths was only 1471; 153 above 60, and 506 under 2 years old. This difference in the rate of mortality in the same months of two successive years, is abundantly striking. In the first period (that for 1795) the mean morning heat for *five* weeks was 23°, and the mean noon heat 29°: in the following year and same month, the mean morning heat was 44°, and mean heat at noon 50°. These circumstances,

as MILNE* justly observes, were favorable for determining in what way *intense* frost affects the mortality in London: "but in comparing the mortality of the severe with that of the mild Winter, one consideration appears to have been entirely overlooked: many infirm persons, no doubt, who had arrived at the brink of the grave in January 1795, and might have lingered *there* a year or two longer, with mild Winters and the favorable circumstances that attend them, were precipitated into it by the severe frost which took place then, and by the privations they had to suffer in conseqence of it. There would, therefore, be fewer persons of that description among the living in 1796 than ordinary; and if the cold then had been as intense as in the January preceding, it would not have occasioned so great a mortality. On this account, the effects both of temperature, much above and much beneath the usual average of our Winters, must be greatly magnified in the comparison mentioned above." As a proof of this, Mr. MILNE shews that in the first 5 weeks of the year 1794, when there was hardly any frost, and with the average price of bread little more than one-half what it was in the corresponding part of the year 1796, the

* MILNE on Annuities &c

total number of deaths was nearly twice as great in the former as in the latter year; the number of deaths of persons above 60 years old, more than three times as great, and the deaths of children under 2 years, greater even than during the same period in the severe frost of 1795.

My limits forbid me to follow his train of reasoning in illustration of this interesting subject, which strikes me as being clear and satisfactory; but the conclusion which he draws is this: admitting that intense frost increases the general mortality in London, which it does; 1st, by affecting the great number of infirm and sedentary persons that are to be found in a large city; 2ndly, by raising the price of fuel and almost every necessary of life; and 3dly, by preventing sufficient ventilation, and by that means favoring the spread of contagious diseases; yet it does not therefore follow that a moderate degree of cold, such as we have in England in the depth of Winter, augments the general mortality. On the contrary, an open Winter, attended with sudden changes of temperature, is upon the whole more fatal than a frosty Winter of ordinary severity.

The correctness of this conclusion is shewn by tables of mortality which illustrate the subject. In Sweden, where the cold of Winter much

surpasses ours, the mortality is not greatest in the depth of Winter, but in March, April, and May, when the weather is doubtless most unsettled.

In England the results of observations made at 25 distant places give the maximum of mortality as occurring in the Spring, and the maximum of that season in April. In July and August the mortality is at its minimum for the year. Indeed there can be no doubt that, what in Scotland is called *blashy* weather—that which is upon the whole cold, but characterized by frequent changes in the degrees of temperature and moisture, induces the highest rate of mortality; or, in other words, that in general *the popular adage is correct.*

Of course these remarks do not apply to all countries. They are intended only for our own.

In regard to the influence of seasons on the mortality of children, it can neither be easily ascertained, nor very correctly estimated. The infectious diseases of children are very numerous and prevail epidemically at all times of the year; so that the rate of mortality will be greatly modified by them. On other accounts, it does not exactly coincide with that of the population in general; as we shall presently see. In London, the deaths under 10 are at their maximum

in Autumn; which, as respects the mortality at *all ages*, is different. This is no doubt owing to the great prevalence of bowel complaints to which, in Autumn, the young are so liable.

The following Table is for London; and embraces 15 years of its Mortality Bills. The seasons are placed not in the usual order, but in the order of their mortality.

LONDON TABLE.

	Under 2	2 *and* 5	5 *and* 10	*Total under* 10
Autumn	40,079	9,067	3,528	52,674
Spring	37,962	9,356	3,710	51,028
Winter	36,922	8,600	3,772	49,294
Summer	33,694	9,156	3,703	46,553

In the GLASGOW table,* for 30 years, the order of the seasons, as to their rate of mortality, differs from the above; and may perhaps be accounted for by the different latitude of the two cities. The Winter in Glasgow is certainly both more severe and changeable, and Summer and Autumn are cooler, than in London; which may explain why the infantile deaths are in the former most numerous in Winter rather than in Autumn. But, as was before observed, the course of infantile epidemics, which, if at all

* Compiled from the mortality bills for that city, published by DR. WATT.

affected by season, is so in an uncertain degree only, disturbs and perhaps sometimes invalidates our best calculations on the subject.

GLASGOW TABLE.

	Under 2	2 *and* 5	5 *and* 10	*Total under* 10
Winter	5,763	2,134	630	8,527
Autumn	5,146	1,410	434	6,990
Summer	4,611	1,713	567	6,891
Spring	4,445	1,569	684	6,698

It may be laid down as a rule that when the rate of mortality is very high in a particular season, it will be low in that which next follows. Here we see the number of deaths in Winter is so high as 8827, and in Spring so low as 6698, a difference which no doubt depends on the comparatively small amount of feeble children remaining alive at the beginning of the latter season.

The number of births occurring in the seasons will determine, or at least considerably influence the rate of their mortality. In Liverpool, during 13 years, I find the amount of births to be in the following proportions:—

Autumn 15,567
Summer 14,934
Winter 14,771
Spring 13,963

Here we have the births at a *maximum* in Autumn. Whether the rate of infantile mortality is in the same ratio I have not at present the means of determining, but have no doubt it would be found to be so. The point, though of no great importance, is worthy of investigation.*

* We are to recollect, in considering this subject, that the rate of fecundity, in the different seasons, is scarcely the same in any two countries. It is influenced by many circumstances, most of which will readily occur to any reflecting mind.

SECTION IX.

THE DISEASES OF INFANCY, AND THE AGES AT WHICH THEY PROVE FATAL, ILLUSTRATED BY A TABLE.

In a former section, we have seen how large a proportion of the deaths in this country, and in some parts of the Continent, happens, under the age of 10 years. A mortality so great must have many causes, some of which we may presume will depend upon circumstances peculiar to civilized society. Granting this, we do not thence infer that the probability of life in the savage state, although its maladies are fewer, is greater than with us. On the contrary, it is certainly less for adults, if not for children. Wars, hardships, alternate famine and surfeit, unwholesome food, gross licentiousness, infanticide, and other barbarous and unnatural practices, as well as great liability to pestilential complaints, check the increase of population in such a condition of society more than even the luxuries and numerous diseases of civilized life.

It is true, perhaps, that we may learn something with respect to the physical management of the young, from the usages of people in a state of nature. Yet to represent such a state as more conducive to health and happiness than that which is the result of civilization, as some philosophers have done, shews an amusing fondness for hypothesis, joined to a convenient forgetfulness of facts.

I am inclined to think we might even learn more that is really useful from an attentive study of the habits of brute animals. Mankind, in whatever state of society, the rude or the polished, are continually straying from truth and nature, by an inherent tendency to pervert their faculties and appetites to their own injury. With the inferior animals it is different. Instinct, unless when blunted by domestication, is in them almost unerring for the ends it was intended to serve; the principal of which are the selection of proper food, and the preservation of life generally. Hence they are liable to fewer diseases, and especially, are less subject to premature death, than the human species. Indeed with a little exaggeration brute creatures might be held up as in several respects well worthy of our imitation; *with full as much* propriety, at least, as those filthy tribes of human

beings which some have dignified with the name of "unsophisticated children of nature."

It is pleasing to reflect that health and happiness keep pace with the progress of knowledge and civilization, even in a degree greater than, unless when we carefully compare the present and the past, we should imagine possible. Reverting to a period as yet little more than a century removed, we find many fatal diseases prevailed then, depending chiefly on circumstances in the condition and habits of the people, the state of the soil, and want of medical knowledge, which now are unknown, or so modified as to excite comparatively little attention. Such were the plague, the milliary fever, scurvy, rickets, dysentery, spotted and intermittent fevers; and it is our own disgrace if we cannot add, small pox.

Within the last seventy years, the habits of the lower classes especially, have been rapidly improving; and as there can be no question that the moral more than the physical condition of human beings, influences the rate of mortality, we may hope for yet greater improvement in the healthiness and comfort of our population.

Indeed much remains to be done. There are many hurtful prejudices to be eradicated, especially in the domestic management of children,

and of the sick. There is great room for advancement in the knowledge and treatment of disease, but particularly in the cultivation of infantile medicine. Our medical police too, if it be worthy of the name, is singularly defective; in this respect we are behind every other European state; a circumstance too well attested, among other proofs, by the continued prevalence of the small pox in all our large towns, when it has for some time been wholly, or nearly extinguished, in most civilized countries. To these might be added grave defects of an economic kind, particularly in the parochial management of the poor, the administration of many of our public charities, and in the want of a general efficient system of education; what has been done in this latter respect, being, in a very great degree, inadequate, at least in populous districts. We should hardly err in affirming, that the rate of infantile mortality will be found to be, *cæteris paribus*, in the ratio of the ignorance and improvidence of the population; a consideration which gives no little weight to the defects above mentioned.

It is consoling to reflect that, where so much remains to be done in the great cause of human improvement and happiness, every one may do something. Whoever, in his own particular

sphere, assiduously inculcates sobriety, cleanliness, industry, and forethought; and is on the watch to correct hurtful prejudices and practices, especially in all that concerns the moral and physical education of the young, performs duties which are not the less important because they are humble and unobtrusive. It certainly does not thence follow that their effects will be limited. The most effective virtues are those which operate at first in small circles: for, as he that is guilty of a moral injury to even a single human being, can never calculate what may be the extent and duration of the evil to which he has given the impulse; so he that is instrumental in improving one individual, however lowly that individual's condition, can as little estimate either the *extent* or *duration* of the benefit.

The importance of infantile diseases, in a medical point of view, must be obvious, when we reflect that, under 10 years of age, nearly *five* times as many human beings die as in any after period of life of the same duration: and moreover, that perhaps two-thirds of all the cases confided to the care of the general practitioner are children's complaints. That these complaints have not hitherto, in this country, received that share of attention which they merit, is evident from the comparatively small

number of works in our language which treat of them. When a department of any science is zealously studied, publications relating to it will be sure to appear as the fruits of such study.

The following table has been extracted with great care, and I hope accuracy, from the valuable register at the RUSHOLME ROAD Cemetery. It will assist us in estimating the comparative danger from different infantile diseases, as well as the age, at which the attack of each is most to be dreaded. It strikes me that many other important corollaries may likewise be drawn from it. In regard to the value of the register referred to, as a record of diseases which cause death, I am inclined to believe, from the character and habits of the present respected registrar, that it is kept with great discrimination and accuracy, and that it is on many accounts incomparably more worthy of reliance than the London mortality bills. It is certainly a considerable, but in this country unavoidable, defect in the mode of registration, that the name of the disease is entered from the mere *viva voce* report of the friends of the deceased, and not as in some parts of the continent, in Berlin, for example, from the certificate of a medical practitioner. Until there is some legal provision to enforce the latter practice in Eng-

DISEASES.	Typhoid fever	Malarial fever	Scarlet fever	Small pox	Diphtheria	Whooping cough	Erysipelas	Cerebro-spinal meningitis	Inflammation of the bowels	Do. of the brain	Inflammatory rheumatism	Do. of the kidneys	Do. of the liver	Puerperal peritonitis	Metritis	Ovaritis	Abscess	Ulcer	Cancer	Tumor	Hernia	Fracture	Dislocation	Sprain	Burn or scald	Wound	Contusion	Old age	Total
Under 1 year																												
1 year																												
2 years																												
3 years																												
4 years																												
5 years																												
6 years																												
7 years																												
8 years																												
9 years																												
10 years																												
11 years																												
12 years																												
13 years																												
14 years																												
15 years																												
16 years																												
17 years																												
18 years																												
19 years																												
20 years																												
21 years																												
22 years																												
23 years																												
24 years																												
25 years																												
26 years																												
27 years																												
28 years																												
29 years																												
30 years																												
31 years																												
32 years																												
33 years																												
34 years																												
35 years																												
36 years																												
37 years																												
38 years																												
39 years																												
40 years																												
41 years																												
42 years																												
43 years																												
44 years																												
45 years																												
46 years																												
47 years																												
48 years																												
49 years																												
50 years																												
51 years																												
52 years																												
53 years																												
54 years																												
55 years																												
56 years																												
57 years																												
58 years																												
59 years																												
60 years																												
61 years																												
62 years																												
63 years																												
64 years																												
65 years																												
66 years																												
67 years																												
68 years																												
69 years																												
70 years																												
71 years																												
72 years																												
73 years																												
74 years																												
75 years																												
76 years																												
77 years																												
78 years																												
79 years																												
80 years																												
81 years																												
82 years																												
83 years																												
84 years																												
85 years																												
86 years																												
87 years																												
88 years																												
89 years																												
90 years																												
91 years																												
92 years																												
93 years																												
94 years																												
95 years																												
96 years																												
97 years																												
98 years																												
99 years																												
100 years																												
101 years																												
102 years																												

STRICTURE OF THE BOWELS	..	..	..	2	..	..	1	..	1	..	4
DEFECT IN THE INTERNAL ORGANIZ.	..	..	..	..	..	..	..	1	..	..	1
INFLAMMATION OF THE HEAD	..	..	2	..	..	..	..	1	..	1	4
TUMOUR ON THE HIP	..	..	..	..	1	..	..	..	..	..	1
INFLAMMATION IN THE GROIN	..	..	..	1	..	..	..	..	..	..	1
INFLAMMATION IN THE NECK.....	..	..	..	1	..	..	..	..	..	..	1
WHITE SWELLING	..	..	..	..	1	..	..	..	..	..	1
BURNED TO DEATH	1	..	..	..	..	..	1	1	5	7	15
SCALDED TO DEATH	..	..	..	..	..	..	1	2	1	1	5
SWALLOWED VITRIOL.....	..	..	..	1	..	..	..	..	..	..	1
TOOK TOO MUCH GAMBOGE	..	..	..	..	..	..	1	..	..	..	1
HUNGER AND COLD	..	..	..	..	..	..	..	1	..	..	1
KILLED BY A FALL	..	..	..	..	..	1	1	..	..	1	3
DO. BY THE KICK OF A HORSE...	..	..	..	..	..	..	..	1	..	..	1
DO. BY A BLOW	..	..	..	..	..	..	..	1	..	..	1
CONCUSSION OF THE BRAIN.....	..	..	..	..	..	..	..	..	1	..	1
DROWNED	..	..	..	..	..	..	..	..	..	4	4
UNKNOWN, AND LINGERING COMPTS.	4	..	..	1	..	4	1	1	2	1	14
	146	116	74	201	218	102					

land as respects the keeping of the parochial and other mortuary registers, we must be contented to remain, as we now are, far behind every other country in the important and fascinating study of medical statistics.

In the Table, under the heads of "Infantile Decline," "Convulsions," "Worm Fever," &c. are no doubt included many distinct diseases to which these popular appellations are indiscriminately assigned; but in other instances, as "Chincough," "Measles," "Scarlet Fever," "Croup," there can hardly be mistake. As an internal evidence of the accuracy of the register, "Tooth Fever" and "Teething" may be instanced. It will be seen in the Table that the deaths under this head, are *all* at ages, when the effects of teething are usually experienced. Moreover it is also to be considered that the name of a disease, as reported by the friends of the dead, is in general that which they have learned from the professional attendant.

After repeated attempts to class the diseases in this table, in nosological order, I find it to be impracticable. No arrangement of children's complaints has yet appeared which, in my opinion, is likely to answer any scientific pur-

pose.* Indeed it would seem that writers on nosology in general have exerted their talents in a thankless task;—talents too of a high order, as the perseverance, learning, and ingenuity of several abundantly shew. Certainly we may doubt how far their labours have been useful, or whether they have not retarded rather than advanced the science of medicine. Unwilling should I be, and the attempt would be absurd, to undervalue the productions of such men as CULLEN, and MASON GOOD; the fame of the former as a nosologist is still unequalled, as will ever be some of his definitions of diseases; yet there is little doubt his reputation will rest upon his Materia Medica and Practice of Physic, when his work on nosology remains only as a curious document to illustrate the history of the healing art.

Whether a nosological arrangement, the fruit of modern pathology, is a hopeless expectation, remains yet to be seen. The degree to which diseases are modified by constitution, season, climate, and an infinite variety of accidental circumstances, renders it at least doubt-

* The only attempts of this kind, which the writer has seen, are contained in Dr. B. DAVIS' Annals of the London Dispensary for Children; and in M. EUSEBE DE SALLE's recent edition of UNDERWOOD, both highly respectable, but in his opinion, unsatisfactory.

ful; and if doubtful, as respects diseases in general, it is still more so with reference to infantile complaints.

The foregoing Table suggests many important considerations. Of the 2056 deaths from various diseases which it exhibits, 994 alone, and most of them within the first year of life, are from Convulsions, Infantile Decline, Water in the Brain, Tooth Fever and Teething, Worm Fever, and Bowel Complaints. Such terms are no doubt somewhat indefinite, and probably, as has been already observed, comprise a variety of diseases which they do not express; yet into how many varieties soever they may be distinguishable, most, if not all of them originate in disorder of the first passages. When to these we add Remittent, Typhoid, Continued, and Inflammatory Fevers, which are to be traced, perhaps, in every instance to a similar origin, we cannot fail being struck with the comparatively small number of deaths resulting from what are called regular diseases. No facts can shew more forcibly the importance which ought to be attached to the physical management of children. Upon it chiefly depends, under all circumstances, the healthy condition of the digestive organs; and when it is neglected or conducted in error, the foundation is laid for many definite as well

as anomalous ailments which either ruin the health or speedily prove fatal.

I have only met with Tables on a similar plan in the writings of two authors. In three successive volumes of the Philosophical Transactions, those for the years 1772, 73, and 74, tabular arrangements of the diseases of Chester are published by Dr. Haygarth of that city. The following is extracted from these documents.

DISEASES.	Under 1 Year.	Betwn. 1 and 2	2 and 3	3 and 5	5 & 10	Total.
FEVERS	5	1	2	6	10	24
TEETHING	6	3	..	..	..	9
St. ANTHONY'S FIRE	1	..	..	..	..	1
SMALL POX	55	40	46	54	24	219
MEASLES	..	2	..	..	..	2
CONSUMPTION	4	4	6	2	4	20
CONVULSIONS	139	35	8	12	1	195
CHINCOUGH	15	8	5	3	2	33
WEAKNESS OF INFANCY	20	13	7	7	2	49
RICKETS	3	2	1	1	..	7
WATER IN THE BRAIN	..	..	..	1	2	3
QUINSEY	1	..	..	..	..	1
THRUSH	1	..	..	..	..	1
LOOSENESS	1	..	..	..	..	1
CANCER	..	..	..	..	1	1
CHOLIC	1	..	..	..	..	1
MORTIFICATION	..	..	..	..	1	1
SORE THROAT	..	1	..	3	..	4
CASUALTIES	..	..	..	3	2	5
UNKNOWN COMPLAINTS	2	1	..	1	1	5
	254	110	75	93	50	582

There is a Table of the diseases of Carlisle, for eight years, viz. from 1779 to 1789, (excepting the year 1780, which was lost) the production of Dr. Heysham, and to be found in Milne's

work on Annuities. The following is that part of the Table which includes the deaths under the age of *ten* years.

DISEASES &c.	From Birth to 5 years of age.	Between 5 & 10	TOTAL
Nervous Fever	2	3	5
Putrid Fever	5	4	9
Jail Fever	4	2	6
Sore Throat.....	3	..	3
Pleurisy	3	2	5
Small Pox	225	8	233
Measles	28	2	30
Scarlet Fever	31	4	35
Thrush	63	2	65
Consumption	34	15	49
Infantile Remittent Fever	19	8	27
Teething	3	..	3
Fainting	..	1	1
Convulsions..... ..	10	..	10
Asthma	1	..	1
Chin-cough	18	1	19
Diarrhœa	7	1	8
Dropsy	1	1	2
Weakness of Infancy.....	204	..	204
Costiveness	1	..	1
Dropsy of the Brain	2	2	4
Scrofula	..	2	2
Jaundice	3	..	3
Unknown Diseases.....	32	11	43
Accidents.....	7	5	12
	706	74	780

PART II.

THE PHYSICAL

MANAGEMENT OF CHILDREN, &c.

SECTION I.

OF THE STRUCTURE, FUNCTIONS, AND TEMPERAMENT OF THE BODY, PECULIAR TO INFANCY AND CHILDHOOD.

THE formation and growth of the fœtus is a subject involving curious and subtle speculations, upon which it is not my intention to touch. The task I propose to myself, is, briefly to describe some of those changes in the conformation and functions of the body, which, beginning at birth, are most striking in infancy and childhood, but yet are to be observed throughout all the stages of life. Indeed, as the infant differs from the fœtus, so it may be said do the child, the youth, and the adult, differ from the infant, and from each other: and this difference is not more remarkable in the size and outward figure, than in those minute structural peculiarities, some of them obscure, which pervade the entire body, and give rise to all the phenomena that characterize the several epochs of the life of man.

At the moment the infant is separated from its mother, it enters upon a new mode of existence. Hitherto it had vegetated in a state of comparative inactivity, surrounded by fluid, receiving vital heat from the parent, and nourished in a manner which no one has been able to explain. It now begins to breathe, to generate its own heat, to purify its own blood, to require and desire food, and to perform, in every respect, the functions of an independent animal being.

At this period, we find that the skin is uniformly livid, soon changing, however, to a bright scarlet, as the breathing becomes free and natural: the change in question depends on the astonishingly fine web of blood vessels of which the skin is chiefly composed, beginning to circulate arterial blood, purified for the first time by the process of respiration. The whole surface is tender and irritable, and no part more than the scalp, which is highly red and vascular, and continues to be so for several weeks. Hence it is, perhaps, that the scalp in early infancy is more liable to eruptive complaints than any other part. The cheeks, on the contrary, do not attain their colour until the process of teething draws the blood more abundantly into these parts: this occurs in the fourth or fifth month;

an age, at which it may be observed, there is the greatest disposition to small pox, and other contagious diseases of the skin.

At so early a period the softness of the skin is remarkable. It is not until the third year that we perceive much alteration in this respect: and though it then begins to be more firm and fibrous, it is still as unlike that of the adult in the vigour of life, as the skin of the latter is unlike that of old age.

Beneath the skin is spread out another covering of the body, called the *cellular substance*, which in infancy greatly abounds, producing that smooth rounded plumpness peculiar to early life. This substance is composed of cells of the most delicate texture, containing liquid fat, the quantity of which indicates in general, with great precision, the state of the health. When the health is perfect, the cells are filled, occasioning the skin to feel firm and compact. On the contrary, the slightest deviation from the healthy standard is marked by absorption of some of the fat, and consequent flabbiness of the soft parts. Should disorder continue, the cells become empty, and the skin hangs as if it were loosened from the muscles.

Bedded in the *cellular substance* and fat are the principal lymphatic vessels and glands, large

and in active operation. The glands, it may be observed, are extremely liable to disease.

The muscles, forming layers, which lie deeper than the cellular expanse, are of a rose colour, soft, and feeble; but, like the skin, acquiring tension and firmness by age.

The bones are particularly worthy of notice, being soft, spongy, and full of blood. Those which are afterwards single, as the breast-bone and the long bones of the limbs, are generally divided into several portions held together by cartilage. The skull, although more advanced in ossification at this age, than any other part of the osseous system, is yet incomplete in some points, particularly in the fore and upper part, where there is an opening called the *anterior fontanelle*, through which the pulsation in the brain may be felt, even so late as the fourth year after birth.

When we consider that the bones are the frame work upon which the other parts of the body are built, that they are highly vascular, and that important changes are constantly going on in their structure, by the gradual deposition of ossific matter, until the completion of the growth, we perceive how readily such changes may be interrupted, by general disorder of the system, to the great injury of the symmetry and vigour of

the body, or even to the destruction of life itself. In this respect infancy and manhood greatly differ: in the latter, the bones are rarely diseased; whereas, in youth, rickets, various kinds of distortion, and affections of the joints, rank amongst its most intractable maladies.

In the adult, the heart beats about *seventy* times during a minute. In the infant, it beats about *one hundred & twenty* times,* propelling the blood with great rapidity into all the textures of the body; indeed into many, where no red blood circulates in after life. This latter fact shews how numerous are the blood vessels, and accounts well for the redness of the skin, flesh, bones, brain, and every other part: for every part is full of blood. So remarkable a predominance of the arterial system over the venous, nervous, and other systems, seems to be necessary for the gradual increase of the body; for, not only have the arteries to supply the ordinary

* In a new-born infant placidly sleeping the pulse in a minute, is 140
Towards the first Year 124
— the second Year 110
— the third and fourth 96
When the first teeth begin to drop out . . 86
At Puberty 80
At Manhood 75
About Sixty 60

Dr. P. Dawson's Practice of Physic.

waste of the juvenile frame, but also to build it up from its feeble and delicate beginning till it attains perfect growth. As their extraordinary duties begin to lessen towards adult age, we find the arteries to diminish in size, number and minuteness of ramification; and the veins, in these respects, to increase.* There can be no doubt that the number, frequency, and fatality of infantile diseases, especially of such as are imflammatory, depend, in a great degree, on this extreme vascularity of all the textures. This fact should ever be kept in mind in directing their treatment.

* The rapidity of the growth of an infant is inversely as its age, and so we may suppose is the vascularity of its frame. M. SCHWARTZ, a German philosopher, has given us the dimensions and weight of one his children at different periods after birth.

At Birth its length was	18	inches	8	lines...	Weight	6lb.
At the end of 8 days.	20	—	2	—	—	7 ½
— 3 weeks	20	—	8	—	—	8 ¼
— 4 weeks	20	—	11	—	—	8 ¾
— 5 weeks	21	—	3	—	—	9 ¼
— 7 weeks	21	—	8	—	—	9 ¾
— 10 weeks	22	—	0	—	—	11
— 11 weeks	23	—	3	—	—	11 ¼
— 13 weeks	23	—	7	—	—	11 ½
In 5 Months	24	—	0	—	—	13 ½
In 9 ditto	27	—	7	—	—	14

and so on. At the end of one year, the length of the body was from 28 to 29 inches, and the weight 20 pounds. Other infants of three years were 2 feet and a half, and weighed from 25 to 30 pounds. This observation implies that, by the 3rd year a child generally attains to three-fourths more than its original length. Of course the rapidity of the growth becomes constantly less.

See FRIEDLANDER de l'education physique &c.

There is another circumstance connected with the distribution of the arteries which assists in discovering the cause of some organs being more liable to disease than others. At an early age, the brain, compared with the face, is more vascular than in the adult; and the same may be remarked of the contents of the thorax and abdomen, compared with the bladder, uterus, and parts in the pelvis generally. The latter, in childhood, are seldom diseased, while the former are the principal seats of its diseases.*

At birth, and for a long time after, the brain is soft and easily lacerated. Its bulk is relatively very great, as may be perceived on looking at the head of an infant.† The nerves which proceed

* The activity of the blood vessels in advancing the growth of some parts more quickly than others and many curious phenomena to be observed in the developement of the body generally, are worthy of careful study, but do not come within the scope of the concise sketch here attempted. There is one circumstance, however, which may be noticed for its singularity. The age of a child, we are informed, is to be known by finding out the CENTRAL POINT of the body: for instance, M. CHAUSSIER ascertained that at the age of six months, it was the inferior point of the sternum: at nine months it was a little above the navel: and at the end of 40 weeks exactly at the navel. The idea is certainly curious, but further observations of a similar kind are desirable.

† While the body of an adult may weigh thirty times more than it did at birth, the brain does not quite quadruple its original weight. According to SOEMMERING, the brain which, at birth, weighs about 13 ounces, will, at the end of two years, weigh 23 ounces; in six years about 36$\frac{1}{4}$ ounces; and at adult age, about 50 ounces.

from it are also proportionably large, and are distributed with surprising minuteness. This indicates the infantile temperament. Infancy is the age of vivid sensations, and of nervous energy. How busily the senses are engaged! how wonderful the rapidity and variety of muscular action! In the young of most of the inferior animals the same may be observed; of which the playfulness of the kitten affords an amusing example. Owing to the size and minute distribution of the nerves; the skin, as well as the stomach and other internal organs, possesses great sensibility to painful impressions, or, as it may be called, irritability. It is not to be understood, however, that the senses generally are so acute as afterwards. They require exercising to attain perfection.

When we look into the infant's mouth at birth, we perceive that its lining is of a deep red colour, and that there are no teeth, nor yet gums. Instead of gums the bony ridge of each jaw is covered by a firm smooth skin. Proceeding downwards to the stomach, the structure of which we can learn only by dissection, we find it to be highly vascular, and its mucous or inner coat of the most soft and delicate consistence. That the irritability of this coat is equal to its vascularity and softness is certain; for we often

find that it is unable to bear the stimulus of the common panado; and even the mother's milk is frequently returned.

The peculiar qualities remarked as belonging to the inner surface of the stomach, belong equally to the mucous membrane of the intestines throughout its whole extent. The quantity of mucous fluid which it secretes, especially when stimulated by acrid substances, and in certain states of disease, is very great, and characterizes most of the bowel complaints which happen so frequently in early life. As to their healthy functions, the stomach and bowels perform them with great rapidity; the former digesting its proper aliment, and the latter expelling their contents, at shorter intervals than in grown people. If the stomach is irritable and easily excited to vomit, the bowels are still more readily griped and disordered; a truth of which most mothers have painful experience.

In the fœtus, and for long after birth, the liver is of extraordinary magnitude. We cannot doubt that it performs an important part in the infantile economy; but what that part is, remains a subject for investigation. The recent experiments and observations of Dr. LEE seem to prove that in the fœtus the liver secretes a fluid which serves for the nourishment of the body during the term of fœtal life. Should this circumstance receive confirmation

it will confer no small honour on the discoverer.*

The kidneys in activity equal or surpass the other organs, as appears by the quantity of urine secreted, as well as the frequency of expelling it.

By the end of the fourth month, provided the infant has been healthy, we may, in general, remark diminished redness of the surface, greater firmness and vigour of the muscles, and increased vivacity and restlessness: the senses are also more acute, the affections more developed and lively. About this period, the infant generally becomes fretful and restless, throws up the milk, and, in most cases, pours the saliva in a constant stream down the pin-a-fore. There is some cough; various little eruptions appear on the skin; derangement of the bowels takes place; the mouth is hot; the gums, which have lately begun to grow, become perceptibly redder and fuller at one or more points; and the babe conveys every thing it can lay hold of to its mouth, to press the gums upon.

* Dr. Lee "ascertained that the stomach of the fœtus, from three to nine months old, always contains a transparent mucous and acid fluid, but never the smallest admixture of albuniuous or nutritious matter—while on the other hand the upper half of the small intestines always contains a yellowish pultacious mass which, in appearance and chemical properties exactly resembles the chyme of the adult—in a word, pure albumen. The lower half of the small intestines contains very little of this substance. The meconium is confined solely to the large intestines. But the most remarkable fact is that a fluid resembling that in the duodenum, viz, pure albumen, is found in the hepatic duct of the fœtus—Hence, it may be inferred that the liver secretes the nutriment of the fœtus which is taken up from the small intestines."—Med. Chirur. Review p. 504. 1827

These signs, in the more favourable instances, precede, sometimes as long as several weeks, the cutting of the two middle front teeth, called the *incisors* of the lower jaw. It often happens, however, that the signs of approaching dentition are more severe. Instead of a flow of saliva, there is profuse purging; large blotches appear on different parts of the body, attended with flabbiness of the flesh, or rapid emaciation, and high fever. When there is neither looseness nor flow of saliva, and sometimes when there are both in a certain degree, the head becomes affected, and convulsions ensue.

The teeth do not cut the gum in a precisely regular time or order. Commonly by the beginning of the fifth month, the two middle incisor teeth of the lower jaw make their appearance. In about a month later, the two opposing teeth in the upper jaw pierce the gum: these, in a couple of months more, are followed by the two lateral incisors of the lower jaw, which in due time have their fellows from above.

When the infant is in its *fifteenth* or *sixteenth* month the foremost grinder teeth of the under jaw cut the gum, next the canine or eye teeth of the same jaw. The latter are very troublesome in cutting, and the gum generally requires scarifying more than once. In the *eighteenth* or

twentieth month the opposing grinder and canine teeth shoot through the upper gum. About the end of the second year, the last or innermost grinders make their appearance *above* and *below* and complete the milk teeth to the number of *ten* in each jaw.

The completion of the milk teeth is an important epoch in infantile life. The babe is now able to masticate many kinds of solid food; the stomach is more vigorous; and the bowels are somewhat less irritable. The bones also are firmer and stronger, so that the limbs no longer totter with the weight of the body; but are capable of pretty rapid locomotion. All the senses are acute, and in wonderful activity; and, of the members, the tongue is not the least restless.

Generally in the *sixth* year after birth, though the time varies in different infants, the jaws have grown so much, particularly in length, that the milk teeth, which at first stood closely together, are now at some distance from each other, begin to drop out, and to be succeeded by the permanent teeth. The shedding of the milk teeth, however, and the appearing of the permanent set, take place very gradually: the latter is not completed till the *ninth* or *tenth* year.*

* There are many curious deviations, from the order in which the teeth usually appear. Such deviations are thus

It is a fanciful distinction, perhaps, to call the interval from birth to the seventh year, when the permanent begin to displace the deciduous teeth, infancy, and the next seven years, childhood. It is adopted however by many writers. The terms *infant* and *child*, when they occur in the following work, are generally to be taken as synonymous; or perhaps we should rather say, that infant and infancy are to be understood as referring to the few first years of life merely, without any precise limitation.

After the expiration of infancy, taking it as equivalent to the first seven years, the child becomes of less importance in a medical point of view, as the mortality from *seven* to *fourteen* is

classed by DR. DEWEES,—"1. Sometimes children are born with teeth ready cut, but this precocity is no proof of vigour of constitution. 2. Sometimes the lateral cut themselves before the middle ones; at other times the canine may be seen before the incisors. 3. Now and then the teeth are very tardy in shewing themselves. We have several times seen the first tooth make its appearance after the 14th month; And VAN SWIETEN mentions an instance where this did not happen till the 18th month, though the child was perfectly healthy; and a child is now under our care who has not yet cut a tooth, though rather beyond 17 months old. 4. RAYER mentions a case where the teeth did not appear till the child was 13 years old. 5. FOUCHARD relates an instance where at six years old the child had none but the fore teeth. 6. BROUZET gives an instance where only one half of the proper number of the teeth was present at the 12th year of the child's life and whose gums had acquired the hardness of an old person's. 7. Professor BAUMES gives the history of a man in whom no teeth ever appeared."

Dr. DEWEES on the Physical treatment &c. of Children.

small indeed compared with that of the preceding years.* For one child that dies between the ages of *seven* and *fourteen*, ten at least die in the period of infancy. The diseases of childhood are nevertheless highly important: being often of an active inflammatory kind, they select as their victims the healthy and robust, who, having escaped the many perils of infancy, are, on that account, to be the more prized as valuable lives. Indeed in the period referred to the system is still highly irritable; and so delicate as yet is the structure of the brain, and of all the other important organs, that when inflammatory action does commence in any of them, the most destructive effects often rapidly ensue.

The infantile temperament has been already adverted to. It is characterized by great suscep-

* CHEETHAM's Blue Coat Hospital in this town contains 80 children, all boys: 40 are from Manchester; the others from the surrounding townships. None are admitted under the age of six years, nor in general remain in, above the age of 14. During the last 8 years there has been no death in the Hospital; and within the long term of 26 years 4 only, as I am informed, have died, and one of these was drowned. This small amount of mortality is at the rate of one death annually in every 520 boys.

The Warrington Blue Coat School contains 14 boys and 10 girls, who are admitted at, from 8 to 10 years of age. During the last 12 years the School has always had its full number; and within that period none have died.

The great seminary at Ackworth, belonging to the Society of Friends contains not fewer than 300 children who enter at the age of 10 and leave at the age of 14. The sexes are generally in the proportion of 180 boys to 120 girls. A gentleman who resided 4 years in this school informs me that during that period only 3 died; which is at the rate of 1 in 400 annually.

tibility of the organs of sense, and, through them, of the mind, to powerful impressions from slight causes; that is to say, from causes which would not, in after life, produce the same or nearly the same effects. A pinch of snuff applied to the lining of the nose, or a little cayenne to the tongue, would, in an infant three or four years old, give rise to a degree of irritation more violent and lasting, both as regards the parts acted upon, and the mind, than would happen in an adult subjected to similar operations. The same difference will hold good with reference to stimuli purely mental. Indeed, the excitability of the infantile mind presents an amusing contrast to the grave *sang froid* of riper years. Tears and smiles, weeping and laughter, love and aversion, curiosity and satiety, succeed each other with wonderful rapidity. The same may be observed in some grown people who are children in spite of their years. One mode of explanation answers for both. In infants, it depends on that extreme delicacy of texture and predominance of the nervous system, which invariably belong to the early stages of life. In the others, the same kind of physical peculiarities have, in a degree, continued from youth upwards.

This subject, although it may appear trifling, is yet worthy of serious attention. In the adaptation

of dress to climates and seasons, in the regulation of diet, in the administration of medicine, in the formation of proper tempers and habits; indeed, in the whole detail of the physical and moral education of children, their bodily and mental peculiarities should ever be kept in view.

SECTION II.

ON THE DUTIES AND QUALIFICATIONS OF A WET-NURSE.

MANKIND would have fallen into a thousand errors in selecting food for the new-born infant, had it not been apparent that the maternal breast was designed to furnish the proper nourishment.

That the milk of the female is intended for her child, is a fact which has never been expressly denied; yet suspicion might seem to be thrown upon it by the conduct of some mothers, who, with no disqualification for suckling, decline the duty, and without scruple transfer it to the hired and doubtful affection of others. When the health of the female is good, however, and her milk plentiful, no excuse for such a course is admissible, whatever be her rank in society; as it is just that she who determines not to suckle, ought not to become a mother.

There are circumstances, undoubtedly, which disqualify a female for nursing her own infant. The following, amongst others, may be enume-

rated. A defect in the structure of the breasts or nipples, either natural or from disease, rendering them unfit to yield milk. Disease, either constitutional or local, affecting the mother, so as to render her milk scanty or unwholesome. The secretion of milk, though abundant at first, soon failing from constitutional peculiarity. Likewise when, from the delicacy of the mother, her own health, or that of the infant is likely to suffer.

This latter reason is one but too often assigned by those who decline suckling. It is by no means easy to determine what degree of delicate health incapacitates for this duty: a conscientious mother will therefore carefully scrutinize the motives which induce her to take so important a step; lest indolence, the love of gaiety, or of freedom from restraint, be found to be of the number. When delicate health is the only plea for not suckling, in general it is well to make the attempt. Persevering attention to the various means that invigorate the health will do much. And, moreover, nursing is occasionally known to improve the health of even the most delicate, —of such as, to all appearance, were the least likely to support its fatigues. This fact, which must be highly consoling to many, ought to prevent even the most timid from finally determining

not to suckle, at least till the experiment has been fairly made. It is also to be remembered, that a single failure is no just ground for discouragement with respect to future attempts: on the contrary, many a mother having failed in repeated trials, has yet afterwards become an excellent wet-nurse.*

When the infant is not suckled at the maternal breast, there are various substitutes which have been adopted; such as the offices of a hired wet-nurse; feeding by the hand; and suckling by one of the inferior animals, as the goat, sheep, or bitch. The first, when attainable, is to be preferred, as the chances of life for hand-fed children are extremely few; and the latter means

* Underwood reports on the authority of Dr. Neilson, that out of 4,400 women who suckled their children, only 4 had milk sores; and these had either no nipples, or had suffered from sore breasts on former occasions. Indeed so numerous are the inducements to suckle, that the wonder is, they are ever resisted except in cases of absolute necessity. In allusion to this subject, Mr. Roscoe, the elegant translator of Tansillo, remarks that "the reason generally assigned by medical men for promoting a custom which has of late (A. D. 1798) received their almost universal sanction, is, that the mode of living which now prevails in the higher ranks, is such, as renders it impossible for a woman to afford her infant those advantages which are indispensibly necessary to its existence and support." Surely medical men do not at present foster a practice so opposed to natural instinct and common sense. In the middle ranks of life it is little known, I mean as a luxury: and even in the higher, I imagine it is confined to the incorrigibly gay—a class, from whose conduct, in justice to the sex, no inference ought to be drawn.

—suckling by a brute animal, is, I believe, seldom or never thought of in this country. It might however be advisable under peculiar circumstances.*

Though a hired wet-nurse is certainly the best substitute for the mother, yet we are not to suppose that she is equally proper; and that a child in such a case will thrive as well as when nourished at the maternal breast: it is natural the milk of every female should best agree with her own infant: and besides, however suitable a wet-nurse may be in other respects, the affection of a mother is one of the few things that cannot be hired.

Connected with the choosing of a nurse are both difficulties and dangers. In this country, the class of persons from which she is commonly selected, contains many, particularly the unmarried part, whose moral character is doubtful; and even the married are mostly mercenary, or extremely poor; circumstances, either of which

* An instance is mentioned, in an early volume of the Annual Register, of an infant that lost its mother on ship-board and was suckled by a goat. By some French writers the sheep is particularly recommended for this purpose. "The great advantage of this method of nursing infants having determined the Governors of the Hospital at Aix to adopt it, one might see each sheep, at the hour of suckling, recognize the NURSLING confided to her, shew it signs of great attachment, and put herself in the most favourable position for yielding her suck."

Gardien de l' education des enfans.

detracts from the best qualities of a nurse. Indeed, unless when a female loses her infant by death, the fact that she deserts it for the sake of hire, though in some instances it may be justifiable, is, in general, but an unfavourable index of her natural affection.

The faults and failings of wet-nurses are noticed by writers, both in verse and prose, in a manner which shews they have never been general favourites. We are told of their laziness, gluttony, licentiousness, insolence, unfaithfulness, and cruelty to their charge; with other traits still more forbidding; forming together a catalogue only equalled by that singular description of women in "AYLMER's Harboroughe," quoted by the Rev. DR. M' CRIE in his life of KNOX: and to which I have much pleasure in referring the curious reader.* There is certainly no little absurdity in all this. It is to be wished that such a class of servants could be dispensed with; but since that may not be, it serves no useful purpose to charge them *en masse* with crimes which, if true, would long since have procured the extinction of their name and office. In the choice of a nurse, as in that of other servants, caution and strict scrutiny are necessary, with this difference, that a correct knowledge of

* Vol. 1, page 227.

the state of her health is indispensable. Upon this point no evidence should satisfy, except a professional opinion: for it is certain that infants have been destroyed by disease taken from a syphilitic wet-nurse; and the bare possibility of such a calamity should excite parents to the utmost vigilance. It lately fell to the lot of the writer to be consulted in a case of this kind. The nurse, a married woman, became infected, as was said, by her husband. However that might be, the infant in her charge, a fine girl of six months old, perished from the complaint after severe and protracted sufferings. Were it necessary, many cases of a similar kind might be adduced.

Those writers who have drawn the character of a wet-nurse, with so much shading, have also favoured us with a delineation of the qualities, personal and mental, that she ought to possess; and which, were they generally realized, would render her far from disagreeable.

"She ought," says a French writer, "to be neither very young, nor very old. Under the 20th year, she has not attained her full developement; and above the 35th she is on the decline. She should be well formed, neither lusty nor very thin: her colour should be fresh and blooming; the teeth sound and beautiful; the lips

scarlet; the breath sweet; her hair neither very dark, nor yet inclining to be red; and she should be free from all violence of temper. The breast ought to be a little full, with a nipple easy to be taken hold of, and so sensitive as to yield the milk on the slightest suction. Her milk should neither be thin nor very watery, and of a pleasant agreeable flavour. Superadded to all these excellent qualities there ought to be a good moral disposition, that they may not be neutralized by any prominent defect of character; but, on the contrary, that she may uniformly regulate her whole conduct with a view to the welfare of the infant." &c. *

* The following sketch in verse is fine, but perhaps it scarcely equals the above in prose.

"Chuse one of middle age, not old nor young,
Nor plump, nor slim her make, but firm and strong:
Upon her cheek, let health refulgent glow
In vivid colours, that good-humour shew:
Long be her arms, and broad her ample chest;
Her neck be finely turn'd, and full her breast:
Let the twin hills be white as mountain snow,
Their swelling veins with circling juices flow;
Each in a well projecting nipple end,
And milk in copious streams, from these descend:
Remember too, the whitest milk you meet,
Of grateful flavour, pleasing taste, and sweet,
Is always best; and if it strongly scent
The air, some latent ill the vessels vent."

ST. MARTHE's Pœdotrophia: trans. by DR. TYTLER.

This description well deserves being remembered. At the same time, as few *mothers* possess all the qualities here enumerated, we should not be too fastidious. If a nurse has perfect and vigorous health; if the breast and nipple are properly formed; if the milk is plentiful, and of good quality; if the temper is mild and patient: and the morals are correct; more need not be required.

There is one painful consideration connected with the hiring of a wet-nurse, which is but seldom weighed as it ought to be: and that is, the fate of her own infant. We are informed by Dr. John Clarke, that "in some families in London, six; in others, eight (successive) wet-nurses had lost their own children:" and that in commiseration of this description of orphans, Dr. Denman, some other professional gentlemen, and himself, endeavoured to establish an asylum for their reception; "but found that the expenditure was too great to be supported by private munificence." The following sentiments of the same excellent writer are highly creditable to his understanding: "It is hardly a question whether society at large is a gainer or loser by the employment of hired wet-nurses. If the child lives, for which the wet-nurse is invited by the prospect of present gain to forsake her own, the child

of the wet-nurse often dies; or it becomes diseased or crippled: her other children are neglected, and her husband, for want of her society, becomes drunken and profligate: she rarely returns home contented with her former station, but compares her present privations with the indulgences she has left: the whole comfort of the labouring man's fire side is broken up; and society has only exchanged the life of one child for that of another, with all the disadvantages above enumerated."

These are certainly appalling evils: but they are such as cannot be altogether obviated. In many cases the best plan would be to permit the wet-nurse to suckle her own and the foster child together, as advised by DR. CLARKE; or, if this may not be, to take care that the former is provided with a breast, and placed, if possible, in the country. How far it is right to seek the preservation of our own child by hazarding the life of another's, I do not take upon me to determine; but, in the case in question there can but be one opinion; that it is our duty to make the unfortunate infant every amends in our power for the deprivation of that to which all have a natural claim—the milk and affection of a mother.

The milk of a wet-nurse ought, if possible, to be nearly of the same age as the infant for which it is intended. This is a circumstance too little regarded. It is not unusual to see an infant soon after birth put to a breast which has already yielded milk for 8 or 10 months; but the effects of such a practice are invariably mischievous. At so early a period of life the colostrum or first-milk is needed to purge the bowels. Medicine may be substituted, but no medicine answers so well. It is not, however, in the earliest stage of infancy only that the milk's being of a correspondent age is important. From delivery to the period of weaning, the qualities of the milk are continually varying, to suit the progressive changes in the wants and structure of the growing child. This circumstance should therefore be always kept in mind in selecting a wet-nurse.

When a mother, or hired nurse, becomes seriously ill, she ought immediately to decline suckling. We should justly hesitate to drink the milk from a cow or an ass affected with disease; and, for the same reason, an infant ought not to be permitted to draw its nourishment from other than a healthy source. Mere local disease is not meant, but those complaints only which, affecting the whole body, disorder the secretions generally, and the secretion of the milk among the rest.

It is not easy to say, what complaints do, or, do not disqualify for giving suck, without risk of misleading. Some nurses are subject to periodical ailments; the health in the intervals being good: such as are sick head-aches, old agues, asthma, and the different forms of hysteria. In these complaints suckling should be avoided during, or immediately after, an attack; as the milk will be more or less altered, and may even seriously disorder the infant.* Consumption of the lungs is a different case. A consumptive female becomes pregnant, and in due time is delivered of a healthy child. Pregnancy, it is well known, generally suspends the malady; but after delivery its march is accelerated. Ought a mother under such circumstances to suckle her infant? It is scarcely possible that her food can be well digested, and assimilated, or her blood duly arterialized in its passage through diseased lungs; when we consider this, and the absorption of purulent matter formed in the progress of the complaint, which must pass into the circulating stream; it is dif-

* In the case of a nurse subject to nervous affections, reported by Dr. CLARKE of Dublin, the milk was found one day to be almost colourless. In two hours after, a second quantity drawn from the breast was ropy like white of egg: several hours elapsed before the milk recovered its proper colour. These changes it was found, were occasioned by her having had hysteric fits in the meantime.

ficult to conceive that the milk which is separated from the blood by secretion can escape being vitiated. On this point however experiments and further observations are wanting.*

As a general rule, the infant is to be put to the breast within 5 hours after birth. Though no milk may be obtained at first, the suction will soon bring it. In most cases this proceeding is delayed 24 or 30 hours; till the mother is feverish, and her breasts become hard, swelled, aud painful: the infant meanwhile is fed on a variety of improper things which seldom fail to produce colic and gripes. From the very delay here mentioned arise nine-tenths of all the cases of sore nipples, and milk fever, which occur. The ordinary manner in which sore nipples are produced is this; the great distention of the breast buries the nipple, so that it can only be seized by the infant after long continued efforts; it thus becomes fretted and inflamed. Excoriation, as might be expected, soon follows.

* Since writing the above I have had occasion to examine the milk of a phthisical patient and to watch its effects on her infant. The milk, in its sensible properties, was all that could be desired. The infant, which was nearly a month old, had been nourished almost entirely at the breast, and appeared in perfect health. this I confess was what I did not expect, as the mother had all the symptoms of tubercular consumption, and died about six weeks after delivery in a state of extreme emaciation.

With regard to what is called milk-fever: in most cases there is some degree of fever when the secretion of milk is commencing; by and by the milk vessels of the breast are painfully distended; these not being duly emptied, the pain and general fever increase; sometimes till the system is thrown into considerable disorder.

A frequent attendant on milk-fever is the gathering of a part, or the whole of the breast; which is occasionally productive of most acute suffering and even danger to life. Such an accident rarely happens in brute animals; and the reason may be, that their young seek the dug almost as soon as they are brought forth, and thus prevent the painful distention of the milk vessels, so frequent in the human female. If we wish to follow nature we ought, in a judicious degree, to imitate this most salutary instinct: and they who doubt the ability of the infant to draw the breast so soon after birth, have only to observe how vigorously it will begin to suck its lip or a part of the dress, almost immediately on being separated from the mother.

There is a prevailing, but an erroneous notion, that an infant cannot be too frequently suckled. On the contrary, every third or fourth hour is sufficient during the day: and each time the breast ought to be drained. By a little per-

severence on the part of the nurse, and by taking care that the babe is suckled just before going to rest, it will acquire the habit of passing the night without the breast. Indeed, by beginning early, much may be done to divest nursing of many of the more irksome circumstances that usually attend it; and which, were the feelings of the mother less interested, must often render it an intolerable labour.

A nurse should live by rule. Her food ought to be nutritive, and easy of digestion. High seasoned dishes, pickles, and every thing that may stimulate to an over indulgence of the appetite ought to be avoided. When the secretion of milk fails, it is common to take to a richer and more stimulating diet; but this, in a majority of instances, instead of remedying, increases the evil. Plenty of succulent food, as light broths, milk, and vegetables, with the addition of fresh beer, are, if the health is good, the more judicious means.*

It is a popular notion that unripe fruit taken by the nurse will gripe the infant: and indeed there can be no doubt that many things pass, in

* Dr. Struve's ale posset is said to answer excellently. "Two parts of rich cow's milk are placed over a slow fire; when it begins to boil, one part of well fermented mild ale is added, and the whole gently boiled for another minute. This mixture should be drunk cold."

the milk, from the nurse to the child. A dose of salts will generally in this way produce smart purging. It is also well known that when mercury is prescribed for a nurse and her infant, it has only to be given to the former to ensure its peculiar effects upon both.

The ordinary beverage of a nurse should be whey, milk, and brisk beer or porter. Wine may sometimes be necessary; but spirituous liquors are in no case allowable.*

A nurse ought to be regular in all her habits, whether of exercise or amusement; as good health and cheerfulness are the best of all qualifications for her peculiar duties: late hours, dissipation, indolence, every practice calculated to produce nervous complaints, should be *religiously* avoided. Exercise in the open air is indespensable. A sedentary nurse as little consults the interest of her charge, as she that indulges in all the dissipation of gay life. Indeed, a mother who does

* The following instructive case is from "ROSENSTIEN on the diseases of children."

"A child perfectly fresh and healthy, and having also a healthy and cheerful nurse, thrived always very well in town; but when it was sent to pass the summer in the country it was observed to become weak and sickly every Sunday. I could not conceive the reason of this, thinking the nurse lived on Sundays, the same as on other days: she never got brandy to my knowledge as is customarily given in Sweden to other servant women. At last I found that some of her fellow servants gave her part of their brandy. This being prevented the child was as well on Sundays as on other days.

not prefer the welfare of her infant to every selfish gratification whatever, is of the number of those who had better decline the office of wet-nurse in favour of a hired substitute.

It is of singular importance, that the mind of a nurse be kept tranquil. Nothing so soon alters, and even suspends, the secretion of milk as violent mental emotion, especially that produced by the depressing passions. Glandular secretion is well known to be, in a peculiar manner, under the influence of the nervous system; and its healthy state depends more on mental tranquillity than on any particular condition of the blood. The profuse discharge of tears consequent on grief, or the feeling of pity, and its suppression in despair; the effect of rage and terror on the saliva; of anxiety on the perspiration; and other phenomena of a like kind, which are familiar to every one; shew how important it must be to the healthy secretion of milk in the female breast, that all strong mental excitement and even uneasiness be guarded against. It is asserted by respectable authors, that the milk of a nurse, soon after a furious sally of temper, has produced convulsions in the infant. Effects of a somewhat similar kind have followed intense grief. On one occasion, the writer witnessed the influence of this passion in the case

of a hired wet-nurse. The circumstances were such as could hardly give rise to mistake. She had left her own child to be nursed in the country, at a considerable distance from her new residence. The account of an alarming illness with which it had been seized was communicated to her; and almost immediately it was apparent that her milk disagreed with the infant at her breast: it was regularly rejected by vomiting; and for several days a degree of disturbance of the system was maintained, not to be accounted for on any other supposition, than that here alleged. At length, when favourable tidings of her own child restored the nurse to her usual tranquility, the infant shewed no further signs of disorder.*

Inebriety which so powerfully deranges all the secretions is most pernicious in a wet-nurse. An excellent writer (NORTH) on the convulsions of children, assures us, that he has known con-

* "It has been remarked, that infants receiving the mother's breast after a violent fit of anger, are so immediately affected, that the white of their eyes acquires a yellowish colour. And the celebrated HALLER relates a case of a child that was suckled during a paroxysm of great mental perturbation, and instantly after was seized with an hemorrage from the nose and mouth; nay, convulsions gripes restlessness &c. are the general effects which follow a conduct equally rash and imprudent."—STRUVE on the domestic education of Children.

vulsive attacks in infants to originate solely from this habit in their nurses, and to subside as soon as the infants were provided with fresh breasts. Indeed I am inclined to believe from what I have observed in my intercourse with the poorer classes, that one considerable cause of the mortality of infants within their *first* year, in large towns, is the practice of drinking ardent spirits so common among females; a practice, when we consider its great prevalence, that more than any other, shews the demoralizing influence of crowded communities on the inferior grades of society.

SECTION III.

ARTICLES OF ALIMENT SUITABLE FOR THE EARLY PERIODS OF LIFE.

FOOD may consist of vegetable or animal substances, or of such as are the production of animals. Of the latter, milk is the most important. It is the natural aliment of infancy, and enters into the diet of every people that possess the animals from which it may be advantageously obtained. The milk of the cow is most familiar to us; but that of the ass, mare, sheep, goat, and camel, is used for food in various parts of the world; and the milk of the ass and mare is employed in our own country as a medicine in certain diseases.

The milk of every animal is distinguished by certain properties from that of all others; and by no property more than the degree of richness; that is, the quantity of nourishing matter which it contains. The quality of the milk of the same animal varies with its food: thus, the milk of the cow, when she is fed in a dry mountain pas-

ture is richer, though less abundant, than when she browses on more succulent herbage. The difference in question is still more remarkable in goat's milk. When this animal browses on the shrubs and shoots of her native mountains, her milk is much richer than when she is in a state of domestication. The richness of milk depends also on another circumstance: when the breast or udder is distended, that which is first yielded, is thin and watery: as it flows, it becomes richer; and that which flows last is the richest.

When a certain given quantity of the following kinds of milk—that of the woman, cow, goat, and ass, is slowly evaporated, till what remains is dry, we find that the quantity of this solid matter, which determines the richness of the milk, is in the following relative proportions.

12 Ounces of	Leave dry
Cow's milk	13 *Drachms.*
Goat's do.	12½ —
Human do.	8 —
Ass's do.	8 —

The properties of cow's milk are these; when it has stood some time it separates into cream and blue milk. Cream is composed of an oil, a little curd, and whey or serum: when churned, it separates into butter and blue milk. When to creamed or blue milk, a little rennet is added,

curds and whey are produced: when carefully parted from the curd, and slowly evaporated, the whey deposits white crystals, which are the substance known by the name of "sugar of milk."

Ewe's milk much resembles that of the cow, but yields rather more cream and curd; it is therefore the richest milk we know of. Next to cow's in richness is the milk of the goat; it yields the most curd of any, but less butter than the two former. Mare's milk is thinner than that of the cow, affords less curd, and its cream by churning does not yield butter. The milk of the ass is thin, sweet, and pleasant; affording only small quantities of butter and curd, but more sugar of milk than the milk of any of the animals already mentioned. In all respects it strikingly resembles the milk of the human female.

Woman's milk varies in its qualities more than any other; a fact we might *a priori* expect from the endless variety in the mode of living, and circumstances of women. In those who are delicately formed and eat sparingly, it is pale and watery, becoming whiter and thicker, however, on improving the diet. Its taste is sweet, from the large portion of the sugar of milk which it contains: in general, it is thinner and whiter than the milk of the cow, yields more cream than the milk of any animal, except the sheep,

and sugar of milk next in quantity to ass's milk. It does not curdle or coagulate so as to separate its curd by any of the methods which succeed with the milk of the inferior animals; a circumstance of some consequence to be remembered: neither does its cream yield butter, however long it is churned. Woman's milk is about as rich as the milk of the ass, somewhat richer than that of the mare, and considerably thinner and poorer than the milk of most other animals. It may here be observed, as it bears on the subject of nursing, that the quantity of its curd increases in proportion to the time which has elapsed since the period of parturition,—a fact equally true as regards cow's milk, and, so far as is known, the milk of all other animals.

Woman's milk is said to have one peculiar and important quality, namely, that it will stand in an open vessel for weeks, or even months, without becoming putrid, or in any considerable degree acid: whereas cow's milk will change, first to the acetous, and then to the putrefactive fermentation in a few days. "I once," says Dr. Clarke, of Dublin, "kept a few ounces of the milk of a nurse who had been delivered about 6 or 7 days, in a bottle moderately corked; it stood on the chimney piece for more than two years and was frequently opened to be examined.

At the end of this period it shewed evident marks of moderate acidity, but was not putrescent." An experiment of a similar kind, which I attempted during the extreme heat of last summer, had a different result. Eight ounces of woman's, cow's, and ass's milk were put separately into three clean vials, which were afterwards lightly corked, and left on a shelf in a cool room. By the third day the acetous fermentation had begun in all of them, and in a few days more each emitted an offensive odour. The experiment, however, deserves being repeated in cool weather.*

As articles of diet, milk and its preparations hold a middle rank between animal and vegetable food. From what has been said, it follows, that the milk of the sheep, and that of the goat are less easily digested than cow's milk; and the milk of the human female, ass, and mare, the most digestible of all; and hence the best suited to the infantile stomach.

It should be noticed, that the process of boiling, by materially altering the component parts of milk, injures its qualities. In cooking this

* On turning to Dr. Underwood's work, I find that in the many experiments on woman's milk, conducted by him, no result resembling that of Dr. Clarke's ever occurred. The truth I believe is, that woman's milk does not become acid quite so soon as the milk of the cow.

article for the nursery, therefore, the heat employed should be managed with due regard to this fact. Milk, also, which has stood some time, differs in its sensible qualities from that which is newly drawn from the udder or breast; that something, in the mean time, is lost, we may judge from the fragrant volatile particles which continue to escape till the milk becomes cold.

Serum of milk, or, whey, deserves particular notice. Of all kinds of beverage it is the best for children, being of an agreeable flavour, bland, nutritive, and mildly laxative: in some constitutions, its effects are even smartly purgative. It would be an unspeakable benefit in large towns, could it be more easily procured; and no doubt, were its value generally known, the supply would soon equal the demand.

Butter, and cheese (which is a compound of curd and butter) are rather difficult of digestion, particularly the latter, which ought therefore to be given sparingly, if at all, in the early periods of infancy. They are both excellent articles of diet, nevertheless, when the 4th or 5th year has been attained. Whatever may be said against them *ex cathedra*, common prejudice is in their favour; and prejudice, in this instance, is right. Butter is to be given cold, or melted at a heat

not higher than that of boiling water; when fried or melted at a high temperature, it is altogether unfit for children.

As an article of infants' food, sugar is well worthy of notice, both on account of its use and abuse. It is very nutritive, and is said to be sufficient of itself for the maintenance of vigorous health, even in those who are laboriously employed. In the West India Islands it is used by the Negroes during crop time as their only food. It is known also to fatten poultry, pigs, and even horses.* Unless when the stomach is in order, and vigorous, sugar is apt to disagree with it, rapidly assuming the acetous fermentation, which is followed by heart-burn, sour eructations, and diarrhœa. It is generally believed that sugar injures the teeth. The negroes

* The experiments of MAGENDIE—"On the nutritive qualities of substances which do not contain azote" are extremely curious. A small dog, three years old, was made to feed exclusively on sugar and distilled water. For eight days it continued in excellent health; began to fall off in the second week; in the third week became emaciated, extremely weak, and the eyes inflamed and ulcerated. On the thirty-second day of the experiment it died. Successive experiments of the same kind were performed with gum, olive oil, and butter: with similar results. MAGENDIE's conclusion, is, that food in order to support life must be in part, at least, composed of matters containing azote. This is objected to by DR. PARIS. The latter thinks that no animal can long exist on a highly concentrated nourishment, such as was each of the substances used in the above experiments, and that this is the explanation of the effects produced on the dogs. It is to be hoped DR. PARIS will put his opinion to the test of experiment. The controverted point is one of deep interest

however who eat it so freely, are remarkable for the beauty of their teeth. The truth is, it has been observed that young people who are pampered with sweet-meats have decayed teeth, and hence the inference, somewhat illogical indeed, that the sugar must be the offending cause. The sugar in such cases, has certainly some effect in the destruction of the teeth, but in no degree more than most of the other matters that enter into the confectionary, which is made of articles extremely difficult of digestion. When eaten freely and often, sweet-meats produce in children habitual disorder of the first passages, as is shewn by paleness of countenance, langour, a capricious appetite, tumid belly, flabbiness of the flesh, irregular bowels, and black or decayed teeth: the latter appearance is the effect of the continual ascent of acid from the stomach, where it is generated, into the mouth. Such is the explanation of this symptom. Let sugar and sweet-meats be given only in moderate quantities, and no mischief to the teeth will follow.

Molasses, as an ingredient of children's diet, is in some respects more valuable than sugar: for while the latter is only allowable as a condiment, molasses may be given freely as affording an agreeable and efficacious laxative. Boil-

ing it mixed with charcoal is said to remove its peculiar luscious flavour.*

Concerning the properties of farinaceous substances, little need be said, as they are well known. Those *farinacia* in common use, as the flour of wheat, oatmeal, rice, the potato and its fecula or starch, arrow-root (a starch differing little in its useful qualities from that of the potato) salep, sago, tapioca and some others, are highly nutritious, and enter more or less into the diet of the young in every country.

Flour of wheat, though less nutritive than oatmeal, is more digestible : the latter circumstance is also true of leavened, compared with unleavened, bread. The different starches, of which arrow-root is perhaps the best, are nutritive, easy of digestion, and answer well as articles of diet in early infancy.

Esculent vegetables form an agreeable and useful addition to the food in every period of life after the first dentition. When given to children, special care should be taken that they are good of their kind and in season. Of the many esculents in common use in this country, none are so digestible, and therefore so proper

* I believe it is DR. PARIS who asserts this fact in his Pharmacologia. Not having the work at hand, I cannot refer more particularly to his account of the process.

for children as the broccoli, cauliflower and turnip. The latter, being mildly aperient, is perhaps the most proper of any. In cases where there exists a tendency to scrofula, or rickets, potatoes should be given sparingly, if at all; in general, however, they enter with great propriety into the diet of the young, care being taken that they are dry and mealy. When soft and watery they ought to be considered as positively unwholesome.

Fruit which is ripe is proper for children, but only under strict limitation. In a sour or unripe condition it is singularly pernicious. Of our indigenous fruits, the apple, pear, and strawberry, are unquestionably the most wholesome; and the orange, of those fruits that are imported. There are strong prejudices against stone fruits, the ground of which I have never yet been able to learn: the greatest evil connected with their use in children is the risk of the stones being swallowed,—a circumstance to be guarded against, as they have been known to lodge in the bowels, forming the nucleus of intestinal calculi, or more commonly giving rise to severe and dangerous bowel complaints. The mucilaginous fruits, as gooseberries and currants, are more hurtful than is generally imagined: when eaten in large quantities, their hard and indi-

gestible seeds irritate the delicate lining of the bowels, so as frequently to produce bloody stools, and other dysenteric symptoms. Their use, however, in moderation, is not to be forbidden. Preserved and dried fruits, with the exception of the prune and tamarind, should form no part of the nursery dessert. Raisins and Smyrna currants, though both are so much used, are nevertheless unfit for children. The skin of the raisin, in particular, has been found to resist even the digestive powers of a hog, passing through the animal unchanged.*

Some kinds of animal food enter properly into the aliment of children, as soon as they have teeth to masticate it. Beef and pork are accounted highly stimulating; that is, they increase the heat of the body, and the strength and rapidity of the circulation, more than other kinds of animal food. Mutton, veal, venison, fowls, and most kinds of fish, are, to use a popular but incorrect phrase, lighter than the former; which means that they are less stimulating, and therefore, in general, better suited

* A friend, in perusing this work when in manuscript, inserted the following remark, the accuracy of which I cannot doubt —"It has been said that the digestive powers of the hog are much weaker than those of most other animals: I believe that grains will pass through a hog nearly unchanged."

to the young. The digestibility of the lean of each kind is said to be in the following order: venison, game, fowls, mutton, beef, lamb, pork, veal.* The fat of all animals, though highly nutritive, is stimulating and difficult of digestion: the same may be said (as respects indigestibility) of smoked and salted flesh. All kinds of oily fish, whether finned or shell, are stimulating and difficult of digestion; and, therefore, unfit for children: as examples, the salmon and the lobster may be mentioned. On the other hand the sparling, pike, sole, haddock, and some others, though less nourishing than the flesh of land animals, are easy of digestion, and, where *variety* is thought essential in the food of children, may be advantageously admitted into the bill of fare.

With respect to the methods of cooking animal food for the nursery, boiling and roasting are the best, or perhaps the only modes that are allowable. Fried, broiled, baked, and minced meats of every description; sauce, of whatever kind, except butter melted with the precaution already given, are forbidden to children under the 7th year. The gravy or dripping from

* The term "digestibility" is here used to signify FACILITY OF BEING DIGESTED, not the quantity of DIGESTIBLE MATTER afforded by each kind of flesh.

roasted meat, which is little else than burnt grease, is in very general use, particularly, poured upon potatoes. This mess, however, is improper, except in the case of very robust children, and is unquestionably more suitable for the stomach of a field labourer. Gravy obtained from the inside of meat moderately roasted is not objectionable.

When animal food is not given in substance, the best of all its preparations is the infusion, or, as it is called, *tea*. This is preferable to every kind of broth, and is more expeditiously cooked. It is made thus, boiling water is poured on the meat (beef, mutton, veal, or fowl,) cut into small pieces, after standing for some time, it is decanted off, well skimmed, and a little salt being added, it is fit for use. It may with propriety be given to the youngest infant, and indeed should form part of the aliment of such as are reared without the breast. Oyster tea made in the same manner is highly recommended by Dr. Dewees: of its excellence and fitness there can be no question.

Pickles and spices of every kind come under the head of forbidden articles. In some cases no doubt the latter may be ordered for medicinal effect.

The kinds of beverage proper for children may be enumerated in three words,—water, milk, whey. Wine, in some instances, is necesssry as a tonic. Spirits, in every form, are to be utterly prohibited; as also, in general, are fermented liquors.

With respect to the infusions of tea and coffee, they would be highly improper, if given alone; but when largely diluted with milk, they are perfectly harmless. In general, tea is much relished by children; perhaps not the less, from its furnishing the usual apology for those noisy migrations, which so frequently take place, from the nursery to the family table.

SECTION IV.

ON THE DIETING OF CHILDREN IN HEALTH AND IN SICKNESS.

HAD the CREATOR ordained that each of the maternal breasts should furnish a fluid of properties peculiar to itself, we must naturally have inferred that the infant required a varied and compound diet; and, that since two species of food were provided for its earliest nourishment, we should scarcely err in adding more. Moreover, had these two fluids, though of different properties, agreed in this, that they afforded a rich nutriment, it would certainly have pointed to a conclusion at which many gladly arrive, without the aid of the supposed facts; namely that we cannot be *too kind* to an infant.

It happens that the reverse of what we have supposed is the case. Both the female breasts secrete the same kind of fluid; and further, instead of a rich juice, there is provided in the maternal milk, one that is weak, thin, and bland, less nutritive than any other kind of

milk except that of the mare, and even less so than panado and gruel, as they are commonly prepared. These are simple, and apparently unimportant, facts; and yet they insinuate a most valuable inference, which is this, *that all richness and variety in the diet of infants are opposed to the analogy of nature.*

We have seen in a former part of this work, how large a proportion of all that die under their *tenth* year do not complete the *second;* and that. of this proportion, most are destroyed, not by what are called regular diseases, as small pox, measles, and the like, but by an undefinable class of complaints, set down in the registers under the names of *wasting*, *teething*, *fevers*, *convulsions*, *&c.* which, it has been remarked, are to be traced, in a majority of instances, to derangement of the stomach and bowels, as their primary cause. In order to understand how these facts bear on the subject of dieting, we must call to mind what has been stated relative to peculiarities in the structure and temperament of infants; as for example, the condition of the mouth, before and during the progress of the first dentition: the delicacy and irritability of the lining membrane of all the first passages, particularly in the stomach; the gelatinous and pulpy state of the soft parts generally; and even

of the bones; and the remarkable predominance of the lymphatic, sanguineous, and nervous systems; giving to infancy its characteristic temperament.

No errors in the management of children occur so frequently as errors in dieting; and on account of these peculiarities, perhaps, nothing is calculated to be more hurtful. Whatever in food does not correspond with the wants and condition of the infant, will be immediately felt, and that, in the degree in which the infant's distinctive peculiarities exist; or in other words in proportion to its youth. Hence arise the various kinds of diarrhœa, marasmus, infantile remittent fever, &c. which may, in many cases, be directly traced to improprieties in diet.

For the sake of arrangement, the subject of dieting is considered with reference to three periods. 1st. from birth to the end of the *second* year, when the milk teeth have appeared. Secondly, from the *second* year to the *seventh*, when most of the permanent teeth have cut the gums. And, thirdly, from the *seventh* year to puberty.

PERIOD 1st. When the maternal milk is good, and sufficient in quantity, the infant needs no other aliment till the 7th or 8th month. In the first hour of existence it is usual to give it gruel, butter, sugar, and other similar matters. This ought not to be done; it is enough that the

babe have the breast after three or four hours; if then no milk is drawn, and it is thought necessary to give something, cream, much diluted with water, answers best.

About the 7th month, a little artificial food is proper, that the infant may gradually become prepared to live without the breast. A sudden change, at weaning, from the maternal milk to spoon meat is extremely hurtful; frequently producing a severe looseness, which in Scotland is known by the name of *weaning brash*. This under rational management may always be avoided.

The artificial food, of whatever it is composed, should correspond in its effects on the infantile system, with the natural aliment supplied by the mother. It ought to be bland and pleasant to the taste. Nothing answers better than biscuit powder, or simply *cracker* boiled in water to a thin gruel, carefully beat through a sieve and sweetened with fine sugar. It ought always to be thin, and free from the smallest lumps; for till the babe has teeth to masticate solid food, it need hardly be remarked that none should be given. To feed a toothless infant with any thing of a solid kind, it has been observed, is as absurd as it would be to send corn to a mill destitute of stones. Some nurses prefer arrow-root to

every thing else; and to this preference I know of no objection. Cow's milk is objectionable at an early age, on account of the large proportion of its curd; after a meal of it, an infant will often shew symptoms of distress, and vomit a large solid white mass of curd. Cream diluted with from four to six parts of water is greatly to be preferred, as it does not readily curdle.

Artificial food at first should be given not oftener than twice a day, and only in small quantity: by and by, less of the breast is to be allowed, and more of spoon meat, till the preparation for weaning is complete, when it may be undertaken with a degree of comfort impossible without such precaution.

So far, it has been taken for granted that the babe is suckled. When this is impracticable, a substitute should be sought for the milk of the breast, possessing, as near as possible all its properties: for, since we must allow that nothing is so proper as the natural aliment from the mother, so, also, that sustenance will be next best which most nearly resembles it. In comparing the qualities of the milk of various animals, it was observed, that ass's milk and that of the woman, are strikingly alike in every respect: consequently the milk of the ass is to be preferred, in such an emergency, to every other species of aliment.

This is an important subject; and should be pressed on the consideration of parents. Occasionally we find a babe that thrives in the early months of infancy on the ordinary kinds of spoon meat; but two-thirds at least of all attempted to be reared in this manner, suffer from it more or less; and the majority of them perish.* It seems to me probable, that were ass's milk more generally substituted as artificial food, the enormous mortality in this class of sufferers would be greatly diminished. Where it can be procured, no other food ought to be given for the first 7 months. A regular supply of milk is to be managed thus:—let the ass be brought to the door where the milk is wanted, four or five times a-day, when the requisite quantity for a meal is to be drawn, and presented warm to the infant. When this extent of ac-

* "It has been part of my duty," says DR. MERRIMAN, "to endeavour to ascertain the amount of mortality among infants from this source; and after much careful inquiry and investigation, I am convinced that the attempt to bring up children by hand, proves fatal IN LONDON, to at least seven out of eight of these miserable sufferers; and this happens whether the child has never taken the breast at all, or having been suckled for three or four weeks only, is then weaned. IN THE COUNTRY, the mortality among dry-nursed children is not quite so great as in London, but it is abundantly greater than is generally imagined. The summer is the most favourable season for making the attempt; but if parents were fully aware of the hazard to which their children are exposed, in the endeavour thus to bring them up, they would rarely choose to place them under the care of the dry nurse."

MERRIMAN's edition of UNDERWOOD, page 3.

commodation is not attainable, the milk before each meal, is to be warmed to the proper degree by placing the vessel which contains it in warm water.

The contrivance by which the milk is administered to the infant is no doubt of some consequence. The glass bottle with a teat, in common use, is, for various reasons, the best. Both are to be kept scrupulously clean; and the latter should be laid in spirits when not in use. To allow the teat to become sour or tainted; and, in either condition, to be offered to the babe, which sometimes happens, betrays a degree of carelessness on the part of the nurse, deserving the severest reprobation.

In some situations, it will be difficult to obtain the milk of the ass. Were the use of it in nursing as common as it deserves to be, the supply, as in all parallel circumstances, would soon equal the demand. When mare's is more attainable, it is nearly if not altogether as proper as the other. A powerful argument in favor of either kind of milk, rather than artificial food, is, that it affords the infant an aliment always the same. Indeed, it is not possible that the latter can always be prepared alike, or always well prepared. And so delicate are the stomach and bowels, so easily deranged, that a single

meal of crude lumpy food is sure to produce mischief: moreover, the milk of the ass or mare, when given newly drawn, has this additional advantage, that, like the maternal milk, it does not, even in an over dose, produce disorder, further than by exciting slight sickness. On the contrary, too much spoon meat (and this kind of aliment is generally given at random, more or less according to the whim of the nurse) produces effects of a more permanent and serious description. It is likewise frequently given too hot, or quite cold. Indeed the irregularity and uncertainty in the manner of administering artificial food, is an evil inseparable from this method of rearing infants, and a sufficient reason why the milk of one or other of the above mentioned animals should, in every instance, be preferred.

When the stomach and bowels of an infant are deranged from over-feeding or improper food, it happens, as might be expected, from the rate of knowledge among nurses on the subject, that the true cause of the derangement is seldom suspected; the same method of dieting is continued; or perhaps something more rich and nourishing is added to remove the apparent debility. The ordinary consequences of such a practice are, that the stomach rejects every

thing which is given, or there is severe griping and looseness; the infant becomes feverish, fretful, and sleepless; the flesh soft and flabby; the skin dry, harsh, pallid, or yellowish, and frequently covered with some eruption; the mouth we find studded with aphthous spots: convulsions, inflammation of the lining of the bowels; or dropsy of the brain, often rapidly closes the scene. These symptoms are not invariably present in the order described; there are others to be more particularly noticed in a future section.* Should the infant be teething, the process is rendered more difficult and dangerous; and when no serious consequences are produced (as will sometimes happen in the very robust) habitual peevishness, an ill conditioned mind and body, are the mildest effects to be anticipated.

This is an important subject, and not to be slightly touched: in whatever manner an infant is fed, at the breast, or by the spoon, the moment it is perceived that the stomach and bowels are disordered, no matter from what cause, the ordinary allowance of food is to be diminished, or altogether withheld, till what is amiss be remedied. That the reverse of so

* See Section 10, on the signs of health and disease &c.

rational a practice is but too common, every medical practitioner is aware. The less able the stomach of a sick infant is to digest its food, the more it is generally compelled to receive, and of the most improper sorts, as strong beef tea or gravy, wine, rich jellies, and confectionary. Surely a little reflection might discover the absurdity of all this. When the stomach is disordered, and particularly if some degree of fever is present, when the appetite is wholly or nearly suspended; and when there is no desire for food, but rather loathing, there can be no digestive power. As well might food be poured into a linen bag with a view of its being digested as into the stomach under such circumstances. When acute disease is not excited, glandular complaints, *tabes mesenterica*, and many symptoms and appearances known by the general name of wasting, are the ordinary and distressing consequences.

When an infant is in perfect health, we cannot be too careful to avoid deranging the first passages. The nurse should be well informed upon this subject. A careless, ignorant, prejudiced nurse, may, in a few weeks, ruin the health of a whole nursery. Nothing is more common than for this (in general) valuable class of servants to err, not only in giving too much

food, but in administering it too often. The more ignorant of them are apt to think, that what they themselves are fond of, can do children no harm: on this ground, ale, and even spirits, are sometimes given; and that (within the knowledge of the writer) with fatal effects. Those conversant with rural affairs know that in engaging a shepherd, dairy-man, or groom, it is made an object to ascertain how far he has practical skill in his particular way; but how seldom is similar caution exercised, or at least to the same extent, in the immeasurably more important concern of selecting nursery servants! Cattle are valuable, it is true, and in rearing them to advantage, judicious and patient management is necessary: let only the same degree of care and skill be exercised in the physical education of children—more is not required.

Again, when an infant is out of health, diet and regimen become at least as important as medicine. In most infantile complaints, at the outset, if all irritation from loading the stomach is avoided, nature either effects her own cure, or powerfully seconds the proper means. Vomiting and looseness, so common in infancy, are at first salutary efforts of the powers of life to expel offending matter from the stomach and bowels:

by aiding such efforts with simple diluents or medicine, the healthy functions speedily return. But if, while the digestive organs are thus rebelling against their contents, we give too much, or even the usual quantity of food, it is plain we thereby increase the mischief. Besides, in administering food, we do so, it is to be supposed, with the design of nourishing the body: under such circumstances, however, the stomach cannot digest it; consequently, instead of a wholesome alimentary fluid, we shall have prepared a crude half digested substance, which is sure to derange the passages in its progress downwards; and if any part of it is absorbed, and enters the blood, it is not likely to improve the health, but rather to perpetuate the disorder. I cannot help thinking that ignorance of these simple principles in those who have the management of children, is the source of many of the ailments which afflict infancy; it also gives rise to that pernicious jealousy of the debilitating effects of medicine, which often counteracts the best directed skill of the practitioner; the nurse undoing with her *nourishment*, what his care and efforts had accomplished: and too often it happens, that, from her superior vigilance and opportunities, the disease and the nurse defeat their opponent.

In general it is of no great importance at what precise period the infant is weaned. Should the mother have strength to yield suck so long, the 10th month is sufficiently early: and if the infant is weakly, two or three months longer can do no harm. It would appear that the natural time for weaning is about the 24th month, that is, when the grinders have cut the gums, and the child is able properly to masticate its food. This inference is drawn from what we observe of the inferior animals, which invariably suckle their young till the latter are able to prepare their own food; and this, whether in the herbivorous or carnivorous tribes, does not happen till a certain number of the milk teeth are protruded. It should be remarked, however, that most of these animals begin teething in two or three weeks after birth, and have the deciduous set completed in a few months. In civilized life it is perhaps unnecessary for the human species to be directed by analogy in this matter: indeed, few mothers are able to suckle for 18 or 20 months, without injuring their health; and, as respects the infant, it is not required: by the end of the year, it thrives in general on artificial food.*

* It has been laid down as a rule that an infant is not to be weaned in Autumn. I think the rule good; but exceptions

After weaning, no immediate alteration is necessary in the *quality* of the food, unless it be, that cow's milk may now be freely given; the stomach, at such an age, being able to digest it without difficulty. The quantity of food proper for the infant will depend upon obvious circumstances, and must, in every case, be left to the good sense of the superintendant. It should invariably be given at regular intervals: four meals in the day are sufficient; enough being allowed for each meal, all gormandizing in the intervals is courageously to be forbidden; and it requires courage to deny the cravings of a child, and good sense too. Children are admirable special pleaders, and singularly eloquent, when the stomach is concerned. They discover the assailable points of their nurse with instinctive acuteness; and when harping on one chord fails, another is soon strung; and every note of the gamut is sounded till they have attained their end. The misfortune is, that they realize the poet's words, which he applies to a very different class of feelings: with them "increase of appetite [really] grows by what it feeds on;"

will frequently occur. In Autumn, infants are peculiarly disposed to bowel complaints, and this tendency is generally strengthened by changing from the breast milk to artificial food. In every case where weaning in this season is resolved upon, the state of the bowels cannot be too vigilantly watched.

for the more they are pampered, the more difficult it will be found to satisfy their capricious and morbid cravings. This is a serious subject to all parties concerned. There is no object in nature more pleasing—more calculated to awaken feelings of kindliness and affectionate delight, than a lively, sweet-tempered, healthy, child. On the contrary, there is, as certainly, nothing more irritating and repulsive, than one that is spoiled; for, as might be expected, the higher qualities of the mind not being as yet developed, the animal propensities, so far as they exist, exert a paramount influence, producing gluttony, insolence, and tyranny; and indeed every possible modification of selfishness in all the artlessness of youthful sincerity. In such a case, our indignation is too often directed against the innocent victim of gross mismanagement, when it certainly should be reserved for senior offenders. Many an infant is never permitted to know the feeling of a keen, natural appetite. No sooner is the regular meal over, than some little matter, by way of indulgence, is thought necessary; as fruit, preserves, pastry, animal jelly: by and by the sated palate craves for something more stimulating, with which, *in due time*, it is also gratified in the forms of sausages, smoked tongue, wine, and similar

dainties, proper enough, it may be, for the parent, but not *quite* suited to the wants and irritability of the infantile frame. Such outrage against all propriety is seldom long unpunished by disease. Occasionally, innate vigour of constitution will maintain an infant under such a system in plethoric health—a state of health, however, which "totters to its fall," as the first inflammatory attack generally finds a ready victim. When life is spared, it is only a life of misery to the sufferer and its attendants. The child soon becomes puny, or bloated, commonly the former; the countenance is sallow and wasted; the skin harsh and blotched; the breath offensive; the belly prominent; the stools are scanty and fetid, the temper is irritable and the appetite capricious; sometimes enormous, at other times loathing all food. That this is no extravagant picturing, the experience of thousands can testify.

No child of ordinary health and vigour ought to be indulged with animal food before the completion of the second year. Circumstances may render beef tea and animal jellies proper; but animal food, in the common acceptation of the term, hardly ever. Not only is it too stimulating and rich, but the mouth is not furnished with the means of masticating it.

When we look at an infant that has just dined on animal food, the face is flushed and swollen, the eye red and bright; the temples throb, and the heart palpitates, propelling the blood with unwonted velocity through the soft and delicate textures of the body—that blood, which this kind of nutriment renders far too stimulating and *forcing*, to advance, in the natural way, the growth and healthful developement of the infantile organs. It should always be remembered, that the painful, and often dangerous process of teething, is in progress throughout nearly the whole of this period; and that it is generally most hazardous in children of full habit; that various diseases, the regular and often fatal attendants on early infancy, are also to be expected; and that, in no other way, can we be in readiness to encounter these impending evils, than by rigid adherence to diet at once simple and natural—in other words—to a diet in every respect suited to the age and constitution of the infant.

There is a species of logic generally opposed to the kind of reasoning here advanced, and which they who use it believe to be conclusive, namely, that many children who eat and drink whatever they please, thrive, and grow to strong and vigorous manhood. This is true. It is also true, that healthy youths emerge, after many

years residence, from those regions of death called Foundling Hospitals. In the most confined and crowded alleys of a large city, we meet too, with fine children, whose strength of constitution has braved filth, noisome air, meagre diet, and every description of morbid influence. We may likewise find infants that have never sucked the breast, surpassingly brawny and powerful. But what of these? Exceptions do not invalidate a rule: it is easy to point to living children who have been reared under such disadvantages. But where is the list of the dead—of those *who were not reared?* Here there is a pause: the dead are in their graves; and the grave tells no tales!

PERIOD 2nd. The infant is now supposed to have merged in the child, or in other words, to have completed the milk teeth. The textures and irritability of the various organs have undergone a progressive change: the former being more firm, and the latter less marked than in the early months of infancy. The difference in these respects, however, is not very great. The strength, vigour, and firmness of the body, differ about as much, perhaps, from what they were at birth (if a mechanical simile may be permitted) as the work of a pocket chronometer does from the more flimsy machinery of a small watch: and these, from what they are at adult age; as the move-

ments of the chronometer, compared with the mechanism of an eight-day clock. To preserve the watch entire, and in order, requires a degree of precaution and management unnecessary with the chronometer; and still less necessary with the eight-day clock. We are, therefore, to remember, that peculiar management is still required: the diet should still be bland and succulent, chiefly milk and farinaceous substances. A little of the more digestible kinds of animal food may be allowed once in the day; though, in my opinion, till the fourth or fifth year is attained, it is preferable made into tea or broth. In recommending animal food at this age, it is needful to add a precaution, that a small quantity only is to be given at a time, and on no account at any meal but dinner. Dr. Dewees observes, "it is agreeable to all observation, that the healthiest children are those which eat the least animal food." I doubt the truth of this remark. There can be no question that very robust children thrive best on milk and vegetables; but in a large town, where so many are of a delicate lymphatic temperament, the stimulus of animal food is, in general, necessary; and the want of it in the families of the poor, in times of distress, is productive of great sickliness and mortality.*

* Though it may seem paradoxical, it is certainly true, that the more vigorous the child the better is he fitted to thrive on

It would be well, were the use of oatmeal, in children's diet, more general in this country. It is unquestionably the most nutritious of all farinaceous substances: and, though it does not, in most instances, suit the stomach of an infant so well as wheaten preparations; yet, at the age of which we are now treating, nothing answers better for breakfast and supper. One grave objection to its use, is its supposed tendency to produce cutaneous diseases; but this is a prejudice originating in a presumed connection between the universal employment of oatmeal in Scotland and the prevalence of complaints of the skin in that country. The truth is, that, in former times, the want of cleanliness was the real cause of the above stigma. At present, though oatmeal is as commonly used as ever, cutaneous diseases are little known; at least, to no degree more than in the southern division of the

meagre and scanty food. In the open country the families of the poor often present the finest examples of robust health when their diet has been only a bare allowance of milk and the less nutritive kinds of vegetables. If the digestive organs are powerful, a little plain food will suffice, because it will all be perfectly assimilated: whereas, when the constitution is naturally feeble, or is rendered so by confinement and the close air of a city, the same food will not maintain health; it will not furnish a sufficiently stimulating nourishment to enable the system to bear up under such depressing causes. This fact, by the way, seems to be too little thought of by those celebrated DIETING practitioners, who indiscriminately recommended to their patients the regimen of Cornaro.

kingdom. * The best form in which this article can be prepared, is what is known by the name of thick porridge—that is, meal boiled in water; to this should be added a plentiful allowance of unskimmed milk. Let the child's breakfast then, which he ought to have within half an hour after rising, consist of oat meal porridge and milk, or milk and bread; one of these is more proper than any other breakfast, and when children refuse to eat it, we may infer that their taste and appetite have been spoiled by indulgence. There is no child in ordinary health, with whom these simple aliments will not agree: but children are extremely politic; and when they discover that feigning a little squeamishness over their pottage secures them a seat at the well-furnished family table, their delicacy of stomach is easily explained. Variety in food, which may be agreeable or necessary in the case of an adult, is seldom to be permitted

* An anonymous English traveller imbued, no doubt, with the prejudices of his nation, furnishes us with the following delicate sketch so late as 1773. "The people of Scotland may be divided into three classes, nobility, gentry, and poor; i e. rank, pride, and poverty. The condition of the poorest sort is deplorable, their chief food being oat-meal in immoderate quantities, which with pickled herrings, salt meat, and the new windy small beer they make use of, together with their unclean habit of body, occasion an eruption of the blood called the itch, &c." Edin. Weekly Magazine, or Amusement. 1773.

to children. It is never required; and is calculated, more than any other practice, to induce gluttony, with all its mischievous consequences. In the interval between breakfast and dinner, if any thing is given, it should be a crust of bread.*

For dinner, roast or boiled, beef, mutton, or fowl, is the most suitable, given in a limited quantity, with a large allowance of bread and vegetables. Of puddings and dumplings, they are the best, into whose composition there enters the least suet, butter, or preserves. The supper should consist of boiled rice with milk, sago, arrow-root, or a repetition of the articles used for breakfast, taking care that there be a plentiful allowance of milk, which is not to be diluted but given as it is yielded by the cow.

Children have a keen appetite, and on that account, are apt to acquire a habit of gormandizing. They should be allowed to eat heartily when the food is of the plainest sort; but in

* We are apt to forget that the stomach requires a respite from its labours as much as the hands or the feet do from theirs. If it be overworked, it will the sooner fail. How many cases of inveterate dispepsia are produced by early gluttony! Let a child have his regular meals, and ample allowance of food at each to satisfy his appetite, but hinder him not from bringing, to every meal, that most admirable sauce—hunger.

things more sapid and stimulating, they ought to be laid under judicious restraint.*

The French observe of the English, that they do not eat their food: they swallow it. "The food," say they, "should be half digested in the mouth." A hungry child is apt to fall into this pernicious habit of only half masticating his food. It cannot be too speedily checked, however, as its effects on the health are decidedly mischievous: he should be taught that a proper restraint, in this particular, constitutes the chief difference in the mode of eating between a brute and a rational being.

As the greater part of mankind are indulgent to their own appetites, it is not surprising that, when they wish to shew their good will to others, it should be by contributing to similar indulgence. When you enter the hut of a Kamtschatdale, as a friend, he plants you before an immense fire, and stuffs you with

* Over distention of the stomach, by food, has been known to produce almost immediate death. A child who had been permitted to eat, without restraint, of apple-pye, died suddenly, and in a manner which seemed inexplicable. On inspecting the body, the stomach was found distended with the food, so that it could not have relieved itself by vomiting. Cattle which cannot vomit, are frequently destroyed from a similar cause. The food, in such a case, swells from becoming penetrated by the gastric juice, or fluids taken into the stomach. The effect is also no doubt in part produced by the extrication of gas.

food until you bleed at the nose! Of course you can do no less for him when he returns the call, and the more dainties you force him to eat the more friendly you are accounted. Against such interchanges of good will between grown people, I cannot be supposed to object; but would plead that children be exempted from their share in such civilities. When they visit their friends, particularly on holiday occasions; besides the routine of set feasts and entertainments, devised for their gratification, they are generally loaded with presents of sweetmeats, plum cakes, and other compositions of the richest description; and the consequences which follow these opportunities of indulgence, are often truly lamentable. None can better declare than the superintendents of boarding schools, the pernicious effects on their young charge of this exeessive and mistaken kindness.

Little more need be said of the kinds of beverage proper for children. At meals, spring water is the best. He that has been accustomed to no other, has reason to be thankful. In some cases, and perhaps in large towns generally, whey might be preferable, on account of its laxative effect. The very common practice of giving, even young children, ale, porter,

wine and punch, cannot, in any words I choose to employ, be sufficiently reprobated; and, as to those who permit them to have ardent spirits, under any pretence whatever, they are probably alike inaccessible to advice and reproof. The prevalence of such a practice amongst the poor in this town, has been already noticed: it is a sure and lamentable, but, for the sake of human nature, it is to be hoped, not very extensive cause of infantile mortality.

Connected with the dieting of children, there is a circumstance, which sometimes occasions permanent inconvenience to those in whom it appears: I mean *antipathies* to certain articles of food. Some cannot eat cheese; others have an invincible dislike to eggs, sugar, or milk: indeed every culinary substance is occasionally found to be the object of similar aversion. The writer has known eggs produce a poisonous effect when taken even in a small quantity, and disguised by the most ingenious cookery. In this case the aversion which was great, might perhaps arise at first merely from their unpleasant effects. Phenomena of this kind are inexplicable. They depend on hidden peculiarity of constitution, which we call idiosyncrasy, and which generally remains through life; though sometimes it leaves the individual. When there

is merely dislike to substances which do not, when eaten, produce ill effects, this is not idiosyncrasy, but habit. Such habits cannot be too early and vigorously opposed, for the mind's sake, as well as the body's. They are always considered as indicating a weak or badly disciplined mind, and should, therefore, be promptly checked.

From what has been said, it is not to be inferred that all the children of a family are to eat the same food, and live exactly in the same manner. It is proper to study, not only the constitution, but also the desires of each; as the latter are often the correct expression of the wants of the body. What maintains one child in good health may be inadequate in the case of another; a judicious parent will, thererfore, (taking care not to encourage caprice) sedulously regulate the diet according to circumstances.

PERIOD 3rd. The child, we are now to suppose, has protruded most of the permanent teeth. This happens generally towards the beginning of the eighth year. Respecting the diet and regimen of boys little further need be said: at this period of life their ceaseless and active exercises in the open air, brace and invigorate the frame; and thereby diminish the

liability to disease. It requires little reflection, however, to perceive the propriety of continuing, in a measure, the same bland diet to the age of puberty. Rich and stimulating food, independent of those mischievous effects which have been mentioned, has others: it tends to *force* the growth and developement of the body in a manner, eventually, not more hurtful to the physical constitution, than dangerous in a moral point of view. So weighty a fact need only be alluded to, in order to excite the anxiety of every parent: and, it may truly be said, that the subject is one about which they cannot be too solicitous.

The habits of girls, at the age of seven or eight years, are in general, more sedentary, and of course their health is more delicate than that of boys. They are particularly liable to irregularity in the action of the bowels, to acidity and derangement of the stomach, headach, and other symptoms peculiar to their mode of life. The judicious regulation of their diet is of the utmost consequence. Whatever disagrees with the stomach, or, in other words, whatever is not perfectly digested, disorders the bowels; and, if the offending cause be continued, may produce a degree of torpidity difficult to be overcome, even by the most skilful combinations

of diet and medicine. Under such circumstances the food should contain something tending to relax the bowels; for laxative medicines are not allowable, so long as diet is sufficient to produce this effect. In order that the digestive organs may perform their functions with vigour, attention, not to diet only, but to bathing, and regular exercise, is necessary, as well as other considerations, which will suggest themselves to every intelligent person engaged in directing the education of females.*

As to the kinds of food, they should differ little, upon the whole, from what have already been recommended upon general principles: in cases, however, where difficulties arise in managing the bowels, whey should be considered indispensable, and should be drunk freely at every meal. To this might be added prunes cooked in different ways, boiled turnips, molasses, brown bread, or

* The notion that the figure and GENTILITY of young females may be improved by a course of sparo dieting, or rather, starvation, is far from uncommon. And some ladies in pursuance of it display a degree of self denial worthy of a Hindoo devotee. With them an ample meal consists of a few morsels of bread and a glass of spring water. Nature consents to no experiments of this kind, but, on the contrary, invariably resents them. DR. BEDDOES informs us that, "in a certain seminary, an elegant delicacy of appetite had been so successfully inculcated, not by actually professed limitation, but by the fear of ridicule, that forty girls were fed for two days on a single leg of mutton." This group would doubtless have afforded an admirable subject for the inimitable pencil of Cruikshanks.

even bread made of ground bran. Although malt liquor is not, in general, to be recommended to children under the age of 12 or 14 years; it may, when circumstances require it, be of singular utility. Its best form is that of new brisk beer, taken freely once or twice a-day: it will sometimes dispose the bowels to regular action when all other means have been tried in vain. Upon this point, which I consider to be of importance, I wish to be explicit: water is the proper *drink;* but where, from habits of living or natural constitution, the bowels are torpid and unmanageable, and the health, in consequence, is becoming what is known by the significant term, *delicate,* new beer is frequently of more advantage than any other article, whether of food or medicine. It may be held as a good rule, that physic ought not to be given to prevent disorder. When the first passages become deranged, let the cause, if possible, be traced and removed: most cases will be found remediable without the aid of medicine, or with that of the mildest and simplest only.

These directions cannot be too often impressed on the minds of parents. In females near the age of puberty, the grand indications of perfect health are, well emptied bowels and natural

motions. To the production of these effects, the physical management should principally tend: and, in general, the management has, in some way, been defective when these effects are not realized.

SECTION V.

OF CLEANLINESS, BATHING, AND THE MANAGEMENT OF THE SKIN.

CLEANLINESS is a test of civilization. The savage and semi-barbarian are invariably filthy. It is also a test of morals, especially in the lower orders: it being generally found that the most cleanly are in all respects the best.

That cleanliness contributes to health, particularly in the young, though a trite remark, is well worth being repeated. Indeed we can scarcely over-rate the influence of filthiness in disposing to disease: it is unquestionably a powerful cause, in conjunction with many others, of the prodigious mortality of children in Workhouses, and Foundling Hospitals, and among the poor generally in large towns. To understand its effects on the human body, some knowledge of the structure and functions of the skin is necessary.

The skin is the general envelope of the body, not only covering its outer surface, but lining all those passages which open to the external

air: as the nose, mouth, ears, &c. It consists of three layers. The cuticle—that part which is raised by a blister or scald: the *rete mucosum* —or net work, in which resides the peculiar colour of the skin: and, the *cutis vera*, or true skin. This latter part is extremely vascular. When injected, in the dead subject, with red size, it appears as if wholly composed of blood vessels. Its nerves also which constitute the organ of touch, are numerous, and distributed with inconceivable minuteness.

The functions of the skin, independent of sensation, are many and important. Millions of pores open on the surface of the cuticle: some, called exhalents, are constantly sending forth the insensible perspiration, and likewise, in certain states of the body, the sweat: others less numerous are absorbents; they imbibe what happens to be in contact with the skin, as water, poison, &c.: a third set are connected with the sub-cutaneous glands, and pour forth a mucous fluid, which keeps the surface of the body soft and unctuous: a fourth, give passage to the hairs.

In infancy the cuticle is tender, easily abraded, and raised into a blister; and the *cutis vera* is more sensitive and vascular than afterwards. Judging from the fatal consequences which some-

times follow slight accidents affecting the skin, we might suppose it to be of more importance in the animal economy, at this, than at any other period of life. A scald of limited extent which produces little pain, and for some time no alarming symptoms, will often end suddenly in death. A large blister or sinapism is also dangerous. Such being the effect of severe stimulants, filth, though its operation is of course very different, cannot but be prejudicial; and this will be the more evident, when we consider that, unlike a blister or a partial scald, it is diffused over and irritates the whole surface of the body.

Whatever interrupts the functions of the skin, immediately deranges those of the internal organs; and the former in turn are affected by inward disorder. This sympathy is remarkable in infancy, particularly between the skin and the intestinal canal; any irritating matter applied to the surface of either, quickly affecting both. Thus we sometimes find a single meal of improper food to cover the whole body of an infant with red-gum; and a slight abrasion of the cuticle alter the appearance and odour of the stools.

When excrementitious matters, smoke, dust, and other impurities, which may adhere to the skin, are suffered to remain and accumulate

instead of being frequently removed by ablution; we call it want of personal cleanliness. Such a state in infancy, when it has become habitual, tends to produce scrofula in various forms, particularly diseased glands; scaly and eruptive complaints of the skin; excoriations; ulcers; stunted growth; and general disorder of the health. Such are the effects of filthiness, the most unnatural of all bad habits, and perhaps one of the most inveterate. Where it exists, the fault lies generally in the education; for the practice of cleanliness, when early inculcated, becomes so indispensable to comfort, that it is usually the last good habit which is laid aside.

It was the custom of the Greeks to immerse the new born infant in cold water. The writer has witnessed the same in Scotland; but where the ordinary temperature of the water is so low as it is in this climate, the practice is improper, and even dangerous. Before it is tried we ought to be well assured of the soundness and vigour of the infant, which we cannot be, till some time after birth. The temperature of the first bath should not be lower than 95° nor above 100°. The latter is the most proper, where the infant is in any degree weakly. The ablution should take place within an hour after birth; on which occasion the nurse is not to attempt the complete

purification of the skin. It is generally larded all over with a white tenacious mucus,—this, at the first washing, cannot be removed without abrading the cuticle, and ought not, if it could; as it seems designed to protect the tender and irritable surface till it gradually become accustomed to the external air and the contact of the dress.

The most important point in washing an infant is to take care that the *seams*—those lines where the skin is reflected on another surface—as between the fingers, backs of the ears, arm-pits, doublings of the joints &c. are made clean. It is in these situations we find troublesome, and even dangerous excoriations; and when they happen, it is almost always from want of cleanliness. It is not the mere general washing daily with soap and water that will suffice; nor plunging the infant in the bath. Each crease of the skin must be carefully spunged, and in those parts peculiarly exposed to the contact of excrementitious matters, the spunge and warm water are to be used every time the diaper is changed. Some nurses instead of a spunge employ merely the soiled diaper for this purpose; but such a practice in the end, by the excoriations which ensue, punishes the carelessness of the nurse, though unhappily it is through the sufferings of the infant.

At an early age the infant should be trained to regularity in attending to the calls of nature. On this point there is great mismanagement and negligence. The diaper cannot perhaps be altogether dispensed with; but its use is so commonly abused by indolent nurses as to make it desirable it were laid aside at all hazards. It is, generally the fault of the nurse, if it is required except during the night; and by the end of the third or fourth month it ought to be entirely omitted.

The daily use of the bath, besides the ordinary ablution of the face and hands, is of high importance in the physical education of youth. In every country it obtains more or less; but most in warm latitudes, where it is at once a luxury and a necessary of life. In Britain the bath is very little regarded. The causes of this probably are the variableness of our climate, which prevents the frequent enjoyment of it in the open air; and the moral sense of the inhabitants, that recoils from the public exposure of the person, especially the indiscriminate mingling of the sexes on such occasions, as may be witnessed in the Seine at Paris, and in the vicinity of other continental cities.

Bathing is not confined to the human species. It is practised by most animals in a state of

nature; hence they are found sleek and clean: even swine are no exceptions to this remark.

The bath is employed at different degrees of temperature, and has accordingly received various designations, as *cold*, *cool*, *warm*, and *hot*, names, which are often used in a loose way, to signify the different sensations produced by immersion. It is evident that *sensation* is not a correct test of the state of temperature, for water which is felt *cool* by one may seem warm to another: the temperature of an individual's body, and the state of his nervous system, at the time, helping to determine such impressions.

The operation of the cold bath (water at 60° and under) is in some respects inexplicable. When the naked body, at its ordinary temperature, is immersed in it for a moment, a peculiar and unpleasent sensation or shock is experienced, with catching of the breath and shuddering; its temperature sinks; the skin becomes numb, of a pale livid colour; and the blood appears to be entirely driven from the surface. This forms *the stage of depression.* In a few moments, if the person is in health, *the stage of re-action* begins; the heart recovers from its surprise, and, as if ashamed to have faultered, propels the blood to the surface with unwonted vigour. The skin now becomes red and glowing; and there is a

universal feeling of tingling, warmth, and energy.

The effects of the cool bath (water from 70° to 80°) are similar, but less severe.

The tepid bath, from 80° to 90°, acts peculiarly. The body on being immersed in it is chilled; and this sense of cold is further increased on getting out, by the evaporation from the surface. The stage of depression is not perfectly produced, and of course complete re-action does not take place. No description of bath answers so well in the febrile diseases of children.

The hot bath, from 98° to 100°, or even a few degrees higher, affects in a manner peculiar to itself. On immersion the sensation is one of pleasant wamth, accompanied by a disposition to relax the limbs, and remain at ease. The heart beats strongly, the whole arterial system is excited, and the skin is hot and of a bright red: after a short interval, perspiration begins to flow and prevents further increase of the temperature of the body. If the person remain long he becomes feeble and exhausted; and, if not removed, faints. On the contrary, when only used so long as it feels agreeable the effects are pleasant and exhilarating; not debilitating, as is commonly imagined.

The cold bath is that which is to be recommended for young people in general after their first

year. The infant should be gradually accustomed to the use of cold water, by reducing the temperature of the bath *two* or *three* degrees weekly, till it be the same as that of river, or even fountain water. It is of little consequence whether immersion or the shower bath is employed. Perhaps I should recommend the latter as being attended with less trouble and not so formidable to timid children.*

Every child of ordinary health and vigour ought to have the cold bath daily throughout

* There is a contrivance that answers as a shower, and general nursery bath, and which has at least the merit of being cheap and simple. It consists of a tub four feet long, by two wide, and two and a half deep, lined with lead. This is set length ways against the nursery wall, or, better in a recess. Over it, a couple of feet higher than its margin, projects a stop-cock attached to a pipe conveying cold water. Under the nozzle of the cock is a tin plate pierced with holes, having a narrow rim, which makes it precisely resemble the segment of a sieve—the straight edge being towards the wall. It is fixed to the wall by means of a staple and catch and may be removed at pleasure. This is the whole apparatus. In using it the child is set in the tub, under the sieve, when the stop-cock being turned, a plentiful shower is received. In administering the warm, and other descriptions of bath, the tub will of course answer perfectly.

The PRESS SHOWER-BATH is not proper for children, unless some one enters it along with them. All alarm arising from such a cause, or in the employment of any other description of bath is as much as possible to be guarded against. A state of extreme terror unfits for the cold bath, as it greatly lessens, for the time, the heat and vigour of the system. In such a state complete re-action does not take place; the child may remain languid and chilly for hours, or even become indisposed,

the year. The proper time for using it is in the morning immediately after rising. It is said a child should not be bathed having an empty stomach: if emptiness succeeding exercise be meant, the caution is extremely proper; but on leaving his bed a child is sprightly and vigorous, and bears the shock full as well as at any other period of the day. In winter though fountain water is employed it is unnecessary to raise its temperature, unless when it happens that the child has recently commenced the use of the bath; in that case, the temperature must be regulated according to circumstances, but where the bath has been used daily for a few months, no precaution is required.

Where there is any doubt with respect to the vigour and soundness of an individual, it is safest he should bathe in the sea, or in artificial salt water. The latter is in no respect inferior to the other. The experiments of Dr. Currie shew that immersion in salt water can be borne without injury much longer than in fresh water of the same temperature. This depends on the stimulating qualities of the salt, acting on the skin in such a manner as to maintain, in some measure, its heat and sensibility when, but for the presence of the salt, it would be cold and benumbed. Hence, though the shock of im-

mersion be equally great in either kind of water, yet re-action and the agreeable feelings which accompany it, follow more quickly when the water has been salt. This circumstance renders its employment safe and beneficial in some instances of feeble children, where fresh water would be injurious.

There are certain rules proper to be observed in employing the cold bath, some of which we may feel assured have been violated when the bathing proves in any degree injurious.

1st. The child must be free from every active, and organic, internal disease; as also in general from cutaneous complaints.

2nd. The body must be of, at least, the natural temperature, or above it; and the skin at the same time free from perspiration.

3rd. It must not be used after fatigue, exhaustion from whatever cause, or a full meal. It is, however, to be understood that smart exercise short of producing fatigue or perspiration, is the best preparation for the cold bath.

4th. A single complete immersion, or momentary reception of the shower, is sufficient; and ought not to be exceeded.

5th. When the use of the bath is followed by liveliness and comfortable warmth, it is beneficial; on the contrary when there is lividness of

the skin, chilliness and languor; either some of the foregoing rules have been disregarded; or, the bathing disagrees, owing to peculiarity of constitution (as where there is strong predisposition to gout) and it should not be repeated.

Friction after the bath is worthy of particular notice: for though in high repute on the continent, it is but little practised in this country. Either the flesh brush or the hand may be employed: each has its advantages. In ordinary circumstances the former is to be preferred, as it is the more pleasant and may be used by an individual to operate upon himself: but where there is muscular debility, and emaciation of the whole body, or of a particular member; hand rubbing is highly beneficial, and will, when judiciously persevered in, increase the fulness and vigour of the muscles with surprising rapidity.

The flesh brush for children should be of the softest description. On leaving the bath, after the skin has been wiped dry, it is to be applied briskly from head to foot, till the whole surface becomes red and glowing. If the child is old enough, he ought to perform upon himself. This species of friction besides clearing the cuticle of scales and scurf, and exciting the cutaneous circulation, strengthens the muscles—an effect sufficiently manifest, but not easily explained.

It would certainly be an objection to the operation did it occupy much time; but a few minutes only are requisite; and the sensations it excites are sufficiently agreeable to render it an occasion of mirth and amusement, after the less palatable immersion in the bath.

The good effects of cold bathing, conducted on the foregoing principles, are not doubtful; but on the contrary are more or less apparent in every instance. Its utility depends on the completeness and vigour of the re-action. When there is no deficiency in this respect, it powerfully diminishes irritability; *tests* daily the strength of the internal organs by repelling the blood from the surface; exercises them by the re-action which ensues; and thus prepares them for the vigorous performance of their functions. This is evinced by the healthy condition of the stomach and bowels, the sprightliness of the child; and still more by diminished susceptibility to the effects of cold and atmospheric changes:—a circumstance which is strong evidence in favour of the bath.

It is said that the daily use of the cold bath in childhood establishes a habit, which in after life can neither be conveniently continued, nor comfortably laid aside. This objection has but little force. Spunging the body with cold water before

dressing may be practised by any one, and is an excellent substitute where the bath cannot be had. There are other objections. Of late it has become fashionable to depreciate the cold, and recommend the hot, bath. The latter is unquestionably of great utility, especially to the feeble and diseased, as well as in certain states of the body, as fatigue and exhaustion. But in the case of healthy children, where it is of consequence to maintain the natural vigour of the system, under circumstances unfriendly to health, as in large towns, charity schools, and other establishments for youth, the cold bath is unquestionably the more serviceable.*

It is certainly desirable that there were public baths in every large town accessible to the poor, free of expense, were it only for the sake of their children. They might be maintained at a moderate cost, by contracting with those joint stock companies which in the present day supply most communities with water. These baths

* For so unqualified a recommendation of the cold bath, I may probably incur censure. I am aware that the cold bathing of infants is not popular at present; but the usual arguments against its employment, as far as I am acquainted with them, apply only to its abuse, which, to be sure, is highly pernicious. I cheerfully subscribe to the following sentiments of the judicious GARDIEN, upon this subject. "Je crois, avec M. BAUMES, qu'en consultant la constitution de l'enfant, il est possible de déterminer les cas, oú, pour le ranimer, on doit employer le bain froid de préférence au bain chaud."

ought to be established in various parts of a town, especially in the quarters inhabited by the poor. In Manchester, a large proportion of the working class never bathe; and such as do, enjoy that advantage only in summer, when they lave themselves, not in crystal waters, but in the streams and canals which intersect the town, where it is doubtful whether they offend most against the cleanliness of their persons, or against public decency and morals.

The art of swimming is a manly accomplishment, but one which has never been general in this country. In warm climates it is attained, frequently, as early as walking: and practised with amazing ease and expertness. The natives of the South Seas, in this respect, approach the state of amphibious animals. In the breakers that surround their islands, enough to appal the best European swimmer, they sport with security and delight; almost a match for the shark in his own element. No doubt in the calm and tepid waters of the Pacific Ocean, swimming is a fascinating exercise: but our own rivers and seas do not present the same inducements: for though in them it may be pursued in summer, it is even then barely pleasant, except to the young and vigorous. When however, it can be conveniently acquired, it is not to be neglected; and were

public baths more common, every boy, and, for ought I can see, every girl, might learn to swim.*

When the temperature of water is under 60 degrees, swimming should be prohibited to all but the robust; as its effects are debilitating, and may, in some instances, be highly injurious. Occasionally we see lads that are fond of this amusement, on continuing it too long, become so weak, as scarcely to be able to stand on leaving the water. Long immersion in a medium so much below the temperature of the body, independently of its rapid abstraction of animal heat, distends the internal organs with blood, without allowing of re-action;—a state imminently dangerous, when there is a weak point in the system; (which frequently happens;) and still more so, if disease already exists.

* Mr. Ellis, in his narrative of a tour through Hawaii, one of the Sandwich Islands, relates some curious particulars of the native children's expertness in the water.

"There are few children" says he "who are not taken into the sea by their mothers the second or third day after their birth; and many can swim as soon as they can walk. The heat of the climate is no doubt one source of the gratification they find in this amusement, which is so universal, that it is scarcely possible to pass along the shore where there are many habitations near, and not see a number of children playing in the sea. Here they remain for hours together; and yet I never knew of but one child being drowned during the number of years I have resided in the islands. They have a variety of games, and gambol as fearlessly in the water as the children of a school do in their play ground."

With respect to the management of the skin, it is unnecessary to say much. If the health is good; particularly if the stomach and bowels are in order, the skin will be soft and clear: but if these are disordered the most celebrated cosmetics will be unavailing.

Pure water is the best cosmetic; especially when aided by simple diet, fresh air, and invigorating exercise: this is not less true *now*, than when the captive prophet and his brethren proved it at the luxurious court of Babylon.

Cutaneous diseases, so common among Barbarians, diminish with improved habits of living and cleanliness. The most loathsome of these, which formerly prevailed in most parts of Europe, are now unknown, or confined to obscure districts. Indeed, the degree in which cuticular complaints prevail in any country, would seem to be a fair index of the measure of its civilization.

Some young people of both sexes are seldom free from pimply eruptions on the face and forehead, arising from inflammation of the mucous follicles of the skin, and their ducts. Not only are they unsightly and vexatious, but frequently they smart and burn in a very troublesome degree. Like every complaint, however slight, this has its cause, and in most

instances that I have examined into it has proceeded from confined or irregular bowels. The health might appear good, but, on inquiry into the state of the alvine excretions, some habitual deviation from regularity has been discovered. The cure is generally easy; but it may be obstinate, as the complaint is sometimes hereditary: at least we see it run in families. Besides laxatives, which are essential, every means likely to improve the general health should be adopted, and among these it may be needful to include a change in the situation and habits of the individual.

SECTION VI.

OF DRESS.

If it be true, as BLAIR remarks, that a sense of beauty may arise from the perception of means being admirably adapted to an end; it can hardly be extravagant to say that a bird's nest deserves the appellation of beautiful. Nothing can answer better the uses for which it is intended; the chief being to serve as a couch or cradle for the delicate nestlings when they have burst the shell. It is lined with the softest and driest materials, thereby affording them at once ease of posture, room to grow, shelter, and warmth. It is surprising how little mankind profit by such displays of the instinctive wisdom of animals. This much is certain, that they do not, in general, show the same wisdom in providing shelter and warmth for their offspring; though all will admit that it is, at least equally required. A new born infant has been aptly compared to "a bundle of delicate tubes." While, therefore, we afford it the necessary

warmth, and protection from the elements, the dress or covering we employ should, in imitation of the nest, neither compress any part, nor in the least impede the movements and growth of the body. That this is not universally the case we shall presently see.

The clothing of infants in our own country presents little upon which to animadvert. "In France they do these things differently." As soon as the infant has undergone the first ablutions, its *chemise* is put on, and over this a linen wrapper called the *couchê* which swathes the body from the shoulders to the heels, including the arms, which are pinioned to the sides. The next step in the operation consists in taking a fustian roller, seven or eight times the length of the infant, with which, beginning at the shoulders, the body is completely encircled; the turns of the bandage being so managed as to compress the chest and belly with great tightness. The limbs, held parallel, are similarly swathed. Not content with one roller, a second is carried round the body, lest the first should slip. This is the *maillot*. That the compression of the middle and nether parts may not force the fluids through the opening of the head, the *beguin* or cap, including a linen compress which is laid on the fontenelle, is fitted on, and strapped tightly

under the chin. Lastly, from the lappets of the cap at each ear a strap descends and is pinned to the *maillot* at the top of the shoulders to prevent the head inclining to either side. At the end of six weeks the infant has its arms liberated. ROUSSEAU, in reference to this practice, observes: "I know not precisely how long a child may remain alive in such a situation; but I imagine it cannot be a great while. This however I think is one of the greatest conveniences of swaddling clothes."

The pretended reasons for such a custom are, first—Lest the infant should injure itself; and, secondly, to prevent the body becoming crooked. The first reason might perhaps be better urged in favour of swathing some who have long ceased to be infants. The second, is absurd.

While it is allowable to smile at this antiquated operation of our neighbours, we are not to forget that the same was practised, at least to a certain extent, in our own country, little more than half a century ago. Even in France the *maillot* is getting into disuse; and ere long, it is to be hoped, it will be met with only in the cabinets of the curious.*

* The practice of swaddling would seem to be of great antiquity. It is noticed in connection with some other particulars relative to the management of the new born infant in the prophesies of Ezekiel, chap. XVI.—4.

In the dress of infants, the chief points for attention are, that it be composed of materials suited to the season of the year, and the state of the weather: that it preserve the body of the natural warmth, without loading it: and that it fit so as not, in any part, to produce uneasiness or restraint.

The monthly dress, that is, the infant's first suit, is generally made too long. The design, no doubt, is to keep the limbs warm; but this end would be answered without so great a train of flannel and calico; the effect of which must be to hinder the motions of the limbs, especially in bed, where it is apt to become twisted, so as to pinion the feet and prevent the babe stretching itself; an exercise that every healthy infant invariably attempts the moment it awakes.

It has been remarked, that, were the inventor of spectacles known, he would be entitled to a grateful monument. The same may be said of the inventor of flannel. In this ungenial climate, its utility, as the inner dress or covering of the skin, is manifold, and very generally appreciated. Its employment is still, however, more limited than it ought to be, especially in the case of children. Mr. HUNTER'S opinion on this subject deserves to be quoted: "Give children," says he, "plenty of milk, plenty of sleep and

plenty of flannel." The use of the first two no one will dispute: and though the last be certainly the least essential of the three, I imagine that all who have attended to the nature and causes of the acute diseases of childhood, will admit its importance in this period of life.

Flannel, like every other texture of wool, is a bad conductor of heat: that is, when placed between two bodies of different degrees of temperature, they do not so soon become of the same heat as when a piece of linen is interposed. Of the difference in this respect between these two articles, any one may convince himself by a simple experiment. Having covered the palm of one hand with flannel, and that of the other with linen, let a lump of ice be laid upon each: the hand with the linen will instantly feel the coldness of the ice; whereas the other will be some time before it is sensible of it. Silks, furs, feathers, and some other articles, conduct heat still more slowly than flannel.*

From what was remarked in the last section in reference to the functions of the skin, it is evident, that when the skin is chilled and corru-

* In Count Rumford's experiments on the relative warmth of seven different articles used in clothing, it appeared that hares' fur and eider down were the warmest. After these came beavers' fur; raw silk; sheep's wool; cotton wool; and lastly, lint. The density (not thickness) of a covering adds greatly to its warmth.—Essays vol. II,

gated by the combined influence of cold and moisture, its functions become interrupted, and the blood is driven from the surface upon the internal organs, without a re-action taking place. In this way dangerous congestions are produced; particularly if the exposure has been partial—if only a limited portion of the surface has been acted upon: an article of dress will therefore be useful in proportion to its power of defending the skin from the influence of such accidental exposure, as well as of the ordinary severity and vicissitudes of the weather, which, in this climate, are experienced during at least eight months in the twelve.

Besides cold and moisture, we have easterly winds, which parch and wither the skin, check the insensible perspiration, and in some constitutions produce various trying and indescribable sensations. In this case, flannel is equally useful, on account of its not readily parting with its moisture, as well as being a bad conductor of heat. In retaining moisture it resembles a sponge; in which respect, it also differs from linen. If a piece of each kind of cloth be wetted and hung up together to be dried, the linen will be much the soonest dry. This explains why the skin of a person who wears flannel will remain soft and moist though it be exposed to

the most piercing wind. On the same principle we account for the usefulness of flannel, as an article of dress, in warm climates; in our own country in summer; and at all seasons in the case of such as, from constitution, perspire excessively. In each of these instances, if linen is worn next the skin, it soon becomes saturated with moisture, is felt to be cold and clammy, and by the evaporation which it permits, chills the body, producing nearly the same effects as exposure to cold and moisture. Whereas flannel, by absorbing the perspiration, and conducting the heat so slowly from the surface, keeps it moist and of an equal temperature.

These qualities make it desirable that flannel should form the inner dress of every infant. It is said to induce cutaneous eruptions; but this is rather a surmise than an established fact. In some people it certainly produces, at the outset, an unpleasant prickling. and redness of the skin. In all such instances, if the skin be not morbidly irritable (which it may be from internal disorder) habit soon reconciles it to the contact of the flannel.*

* Flannel may disagree owing to idiocyncrasy: on this Dr. Dewees remarks, "It may readily be detected by the child almost constantly expressing uneasiness, without any obvious cause; and by an efflorescence spreading itself over the body, which immediately disappears so soon as the flannel is removed." Page 71.

The notion that children ought to wear a thin dress, that they may become hardy, was long recommended on speculative principles, and by none more than LOCKE. It certainly answers with the robust; but taking children in general, the delicate with the strong, how many would die in the seasoning were the theory universally practised! Perhaps it might be safely tried in temperate regions, but in this inclement island no better expedient could be devised for checking our redundant population. Let children be first sheathed in flannel; and then let them be freely exposed. Without this precaution, their exercise, in certain states of the weather, must necessarily be abridged—a serious evil indeed, as all that are healthy ought to be abroad on most days in the year. In pursuance of the "Hardening System," LOCKE advises that a child's feet be washed every day in cold water; and his shoes made so thin that they may leak and let in water whenever he steps in it. "Here," says he, "I fear I shall have the mistress, and the maids too, against me." To washing the feet in cold water nobody neither "mistress nor maid," could object; but the latter part of the advice may be differently thought of. Leaky shoes may be allowable, so long as the child is in active exercise, but when he becomes still, the con-

sequences are sure to be felt. No doubt the hardy and well seasoned would bear this, and a great deal more, without injury; but unless when circumstances prepare children for it, as when they live in the country, are exposed to every kind of weather, and occasionally tear their shoes in the violence of their sports, the the advice appears extravagant and whimsical. Were the pallid offspring of our towns to have their shoes leaky, or purposely slit open, the effects, I am persuaded, would be most beneficial to the profession; they would more than repay its members for the bitter things this great philosopher has elsewhere vented against them.*

If Mr. LOCKE'S system is in any shape to be adopted, it would be better at once to make children go barefoot, as is done in Scotland; where the feet, hardened by constant exposure, press the green sod and the snow with equal indifference. Without, however, advocating this relic of barbarism, which, in an advanced state of civilization, northern frugality still cherishes,

* In cautioning parents against the use of physic in the nursery, in which he is certainly most judicious, Mr LOCKE observes: "In this part I hope I shall find an easy belief; and nobody can have a pretence to doubt the advice of one who has spent some time in the study of physic, when he counsels you not to be too forward IN MAKING USE OF PHYSIC AND PHYSICIANS."

I cannot help remarking, that as most Scotsmen in childhood have been seasoned in the manner described, it may be queried whether the vigorous health they so generally enjoy in every variety of climate does not, in some measure, depend on this species of early discipline. If it be said that such an inference is in favour of Mr. LOCKE's plan, I reply, that to go barefoot differs as much from wearing leaky shoes, as being abroad in the cold air differs from a partial exposure to it.

Children's shoes ought to be made large and easy. Their feet are rapidly expanding: consequently shoes which at present *just* fit, will pinch in a month. Hence are produced doubling of the toes, painful corns, curving of the nails into the quick; and often headach and general disorder.* Shoes for daily wear should never be thin; such shoes do not protect the feet in walking; and instead of encouraging a firm manly step, give rise to a timid, hobbling gait, which is extremely uncouth.

With regard to the covering for the head, it cannot be too light. It is proper that a night cap

* This latter effect of tight shoes is extremely marked. It is doubtless in part owing to the compression of the blood vessels of the foot causing more blood than usual to flow to the head, but the disturbance of the system which so readily takes place evinces also the important sympathies which connect the feet with other organs, particularly with the head.

be worn for cleanliness; otherwise the hair would be sufficient. And speaking of the hair, it may be remarked, it should not be cut too short: it is the natural covering of the part; and it ought not to be shorn like an annual fleece. It is commonly said we should keep the head cool, and the feet warm. This, though a vulgar, is a correct maxim: like many other popular sayings, it is the fruit of observation. The head is seldom in danger of being chilled; more blood flows to it than to any other part; its circulation therefore, in health, is always vigorous, and in most diseases over active: hence whatever diminishes the relative impetus of the cerebral vessels, (and cold is the best means we know of, for that purpose,) is found to increase the vigour of the system generally. The feet, on the contrary, being farther from the heart than the head is, and less vascular, are easily chilled and contracted by cold: in this condition, their blood vessels, not admitting the usual quantity of blood, the excess is of course thrown upon other organs, and will affect those the most that are already best supplied, as the abdominal viscera, brain and mucous membrane of the air passages, producing diarrhœa, headach, catarrh, or other ailments.

In raw cold weather, the neck and breast,

especially of girls, should be well covered. In general we do not know beforehand who are, or are not, predisposed to glandular swellings; for this reason none ought to be exposed to the exciting causes, of which cold is among the most powerful. No part is more exposed to it than the neck, and here enlarged glands most frequently appear. Complaints of the joints illustrate this observation. Of the large joints, the knee, the elbow, and the ancle are most exposed; and these are the more often diseased.

It is common to lay aside the flannel on the approach of summer; but this, unless when something is worn as a substitute, is seldom done without injury. It has been asserted that flannel proves hurtful in hot weather by hindering the due escape of superabundant animal heat. This is, in a great measure, erroneous. Excess of heat passes from the human body in some degree by radiation and the contact of the air; from both of which, it is true, a covering of flannel defends the surface; but it passes off with incomparably greater rapidity by means of perspiration. This excretion, when it is free or *sensible*, is like imperfectly formed steam, partly vapour, and partly fluid; in the formation of which much sensible heat becomes latent. Now, flannel does not impede this mode of cooling: if it does harm

it is by encouraging too copious a flow of sweat; however, by preventing the sense of chilliness, and consequent corrugation of the skin, which readily happens when linen is worn, it preserves the whole surface moist, and prevents those sudden partial checks of the cutaneous discharge, which, in hot weather, are the usual precursors of the most dangerous diseases. Besides, when the temperature in the sun, is much above that of the human body, flannel is positively cooler than linen, as it shields the surface better from the calorific rays.

In comparing flannel and linen as articles of clothing in hot weather, I am supposing that the finest flannel is worn; so fine as to weigh, measure for measure, little more than linen.*

A change from warm to light clothing, or the reverse, should always be gradual. The skin

* It would seem that flannel is less recommended now than it was a few years ago; and some medical men even forbid its use in every instance. Fashion is supreme in the disposal of almost every thing except our wants and these unhappily abide by us in all changes: on this account a discarded comfort, such as flannel, has always a chance of coming into favor again. I readily admit that linen, in temperate weather is the pleasanter wear. The very name of clean linen is associated with delicious feelings of coolness and comfort; and could we choose our climate,—were Britain in this respect like Otaheite or Juan Fernandes, linen ought to supersede every other species of inner dress. But so long as we continue to live where there are clouds, moisture and cold, we are compelled to consult our sensations rather than the opinions of professional men, the former being perhaps the least variable of the two.

should no more be tried with the extremes of exposure than the stomach with the extremes of fasting and surfeit. Yet, though this will be readily admitted, no point in the management of the body is less attended to. How often do we see females wrap themselves in close, warm dresses, during the day, as if they feared the very contact of the air! but no sooner has the raw, cold evening set in, than a metamorphosis takes place; now may be seen the loose robe, the airy gauze, the silken slipper, the uncovered arms and bosom; and in this attire, or with little other covering, a visit is paid to a distant part of the city, it may be, amidst the chilling fogs of November. Were such a practice confined to the grown lady, I should decline animadverting upon it; but in children's parties, on holiday occasions, we may witness it, with this aggravation, that in a child it is attended with more risk. Surely children might be dressed with some regard to comfort, unless indeed it has ceased to be true, that "folly never comes too late."

In describing the French baby dress called the *maillot*, the pernicious effects of ligatures on the body were pointed out. In our own country there is one point in the dress of female children which it would be inexcusable to overlook. I

allude to the use of laced bodices, stiffened with whalebone or steel. The following narrative will illustrate the effects of wearing a compress on the trunk of the body. A. B., a girl five years old, has lateral curvature of the spine, for which the Hinckley collar has been worn two years and a half. The collar is fitted thus :— a frame of elastic steel properly padded fastens round the loins, and at the same time rests on the pelvis: from this frame a steel bar ascends in contact with the spine; at the nape of the neck it bends a little backwards, forms an arch over the head, and to its point or termination, which is on a line with the forehead, a silk or leather sling is affixed to bear up the chin, and thus in a certain degree suspend the head. The chief design of the machine is to take off the weight of the head from the spine, and throw it, by means of the upright steel bar, on the pelvis: while, by lengthening the bar, for which there is a contrivance, it stretches the spine, and maintains it in the natural upright form.

It is clear that this contrivance, which is never laid aside but in the night, must, by fixing the body upright, impede such movements as stooping and bending to either side; and of course suspend the action of all those muscles whose office it is to produce these motions. On

taking off the collar in this instance, it appeared that though the spine was straight so long as it had the adventitious support; no sooner was the collar removed, than the body became more deformed than ever. On examining the back, the cause of this was apparent. The muscles on each side of the spine having for so long a time had no office to perform, were shrunk and emaciated in an extraordinary degree; so that, instead of curing the deformity, the collar had produced effects evidently tending to increase it.

The application of the foregoing facts is equally easy and instructive. They shew what mischief must result from any contrivance impeding the natural play of the muscles of the back and chest. Let any one, desirous of understanding fully the effect of suspended muscular action, carry his arm in a sling for a few weeks: he will find it become not only smaller, but so weak as scarcely to bear its own weight: nor will its former plumpness and strength return, but in a gradual manner, and by exercise. It is in this way with the aid of compression, that vagabond impostors contrive to wither a leg or arm, whenever it suits their purpose.

When a girl of 5 or 6 years old has her first bodice which is stiffened with perhaps only one piece of whalebone; even this slight impediment to

motion will, in some degree, enfeeble the muscles supporting the trunk:* and in course of time, when more *stiffening* is added, these muscles will be almost as effectually deprived of their office, as are those of the arm when that member reposes in a sling, and the emaciation and debility will be nearly alike in both cases.

I take not upon me to affirm that every instance of lateral curvature of the spine arises from this cause. On the contrary I am inclined to think it acts in producing this complaint only in conjunction with other causes, such as continued derangement of the stomach and bowels, habitual malpostures of the body, and, whatever tends to enervate the system generally: but of all these, stiff stays would seem the most efficient, on account of the deformity being almost exclusively confined to the female sex.†

Besides their effects on the muscular support of the spinal column, stiff bodices injure the health by compressing the lower part of the

* I think I have observed that the muscles of children are sooner affected by this cause than those of grown people. If a child has the foot injured, so that this member is for a time useless; the muscles of the whole limb shrink and emaciate with great rapidity.

† It is hardly possible to pass along the fashionable promenades of any of our large towns without being struck with the number of well dressed young females affected with distortion of the trunk of the body. There can be no doubt that this complaint is more common than it was in former times. The cause, we have reason to fear, is more obvious than remediable.

chest and the sides. Whoever looks at a human skeleton will observe that the bones of the chest form a hollow cone, the apex of which is at the cervical opening: within, in the living body, lie the lungs, the heart, the great vessels, nerves, and other important parts. The liver, stomach, and upper intestines, though only covered by the ribs in part, suffer more by compression of the base of the cone than parts which lie wholly in its cavity. Tight stays are avowedly worn to improve the figure, by producing a slender waist—that is—by lessening the circumference of the cone at its base—an effect which not only impedes the motions of respiration, of the heart, and great blood vessels; but also the expansion of the stomach, and especially the passing of the digested aliment from this organ into the bowels. Hence arise trains of distressing symptoms and miserable feelings: as sick headach, vomiting, pain in the stomach and in the side, short breathing, irregular bowels—in fine, that state which is named, not perhaps scientifically, but most significantly, *delicate health.*

Occasionally we find young ladies who wear stays, ordered to use the dumb-bells, with the view of "opening a narrow chest." This is partly well, as it strengthens the arms and shoulders; but how, under such circumstances,

it can "open the chest" is difficult to understand. Suppose a person about to open a box, were first to tie it round with packing rope, and then begin to prize it open, we should not entertain a very high opinion of his sanity: and we may at least say of the other attempt, that it is a curious instance of prejudice.

A compressed waist has been long thought essential to a fine figure. The bodice and hoops of the Beauties of former days meet the eye in every picture gallery; and though less harmless to the shape, these "weapons of the fair" were in quite as good taste as their high heeled shoes and steeple bonnets. The figure, to be beautiful, must be natural. The Chinese, many tribes of savages, and some civilized people, no doubt, think otherwise. Still there must be a standard of reference in this as in other matters of taste. The Grecian females, we know, presented specimens of beauty; at least this has been generally allowed. Their noble forms, unfettered by caprices in dress, and invigorated by exercise and simple diet, were models for the statuary to imitate, the copy defying even his teeming imagination to add a single grace.

In settling this point therefore, namely, in what consists the natural form of the waist, we cannot do better than refer to the productions of

the best artists—to such forms of beauty as immortalize a CANOVA and a CHANTRY. The Dancing Girls of the former, so finely shewn in the etchings of MOSES, I would recommend to the study of all who are interested in the education of girls. In them we see nothing of the sunken breast, and the waist in the form of an inverted sugar loaf; but on the contrary the deep chest, the well expanded ribs and the muscular loins; qualities which few can ever possess who are laced from childhood in steel bodices.*

If something in the form of stays or bodice is thought to be indispensable, (though under the age of puberty it cannot be necessary,) I would advise it to be made of quilted linen or flannel, without stiffening materials, and instead of being laced, to fasten behind by means of elastic straps, and buckles. It would thus sit close to the body without compressing it, displaying the shape and at the same time allowing perfect freedom of motion.

* See the works of ANTONIO CANOVA engraved in outline by HENRY MOSES.—vol. I.

SECTION VII.

OF AIR, TEMPERATURE, AND EXPOSURE.

THE air we breathe is composed of two gases, nitrogen and oxygen: a single portion of the latter being united to *three* parts by weight, or, *four* parts by measure of the former. It contains also about one part in a thousand of carbonic acid gas. Wherever its composition has been examined, in cities, in the country, on the tops of mountains; at every season, and in every climate, these gases have been found united in the same proportions.

Oxygen gas is essential to the life of animals. An animal immersed in air deprived of oxygen dies. Nitrogen is not in the same degree essential, as oxygen by itself supports life; not comfortably indeed, for in the pure state it is too stimulating. Hence, by some, nitrogen has been thought to be of use only in diluting the other gas. But of this there is no sufficient evidence. On the contrary, nitrogen would appear to be of great importance to life, on account of its entering largely into the composition of animal bodies.

Carbonic acid gas, or mephitic air, as it has been called, from its deleterious effects on life, is generated in abundance under various circumstances; as in the fermentation of liquors, the burning of charcoal, the respiration of animals, and by the leaves and flowers of vegetables in the shade, or during the night. It has certain properties with which every one should be acquainted: of these the most remarkable is its gravity, which causes it, where it mixes with the air in more than the usual proportion, to descend and occupy the lowest situations. Thus were a person to pass the night in a room crowded with people, or under a tree, he would feel a degree of stupor and headach, the effects of respiring an undue quantity of this gas. But were he to sleep beside a burning lime kiln, a fermenting vat, or in an apartment having a charcoal fire, the gas generated would in general be sufficient to destroy him. Instead of lying on the ground, however, were his couch in either case raised a few yards high, the danger would be much less, as the mephitic air, though copiously evolved, might not reach him.*

* It is a curious fact that pure Carbonic acid gas is strictly irrespirable. It cannot be drawn into the trachea, even by the most powerful voluntary efforts. Sir H. Davy found that air was still irrespirable when it contained three-fifths of its volume of Carbonic acid, but that when the proportion

Water is always found in the atmosphere. When we speak of air being dry, we mean that it contains no visible moisture; not that it is without moisture. On the contrary, the driest air may be shewn to contain water. Again, when we say that air is damp, we mean that there is much sensible moisture in it; not that air apparently drier may not contain more.

Air, being "the universal solvent of odours, the medium of all smells," must have in it an endless variety of aeriform substances, arising from the changes continually taking place on the surface of the globe. The different earths, many stones, and some metals emit odours; leaves and flowers, stagnant marshes, animals, decaying substances, and every kind of artificial process, all mingle their effluvia in the air, and modify its qualities.

Though the air in a town, and in the country is, as far as chemistry can decide, nearly the same; yet in reality there must be a great difference. In the former, the smoke of coal fires, the offensive vapours of a thousand manufactures, odours arising from the preparation of food, from animal bodies in health and disease, from offal,

was diminished to three parts in ten, it might be received into the lungs; the effect it produced after being breathed for a minute was a light giddiness and a tendency to sleep."
BOSTOCK's Physiology.

and from common sewers—are dissolved or suspended in the air. Added to this, is the want of ventilation, or agitation of the atmosphere, owing to the height and disposition of the buildings; a circumstance entitled to deep consideration, as it is probable that these effluvia, when not dispersed, undergo fresh changes in the air, that render them more injurious to living animals.

In situations still more confined, as prisons, hospitals, cellars, houses in deep narrow lanes, especially if there be many inmates, where ventilation is difficult or impracticable, the air becomes occasionally so charged with effluvia, as to be unfit for the maintenance of health, or, rather fit only to produce pestilential diseases.

In this cold climate, the air in the country, except in the vicinity of marshes, is free from any admixture to affect health. The natural inequalities of the surface cause perpetual breezes, which, sweeping over a well cultivated soil, contract nothing that can even offend the senses. Here it is that infancy and childhood should be passed. In general grown people who are temperate may enjoy health in a town; but with infants and children it is notoriously otherwise. A few families blessed with peculiar vigour are reared with a short sick list, or perhaps without one: but in nine families out of

ten, every member arrived at the age of puberty, has been, at some time, seriously ill; and the greater part once or oftener every year. In an open upland country, on the contrary, the majority of families know as little of the apothecary as the *ferœ natura* in the fields.

It is necessary that temperature be considered in connection with air. In this climate, the heat of the body in health is about 98 degrees of the thermometer;* but the hands, feet, ears, nose, and even the whole surface is often many degrees lower. Hence, if we judge of the temperature of a body by the touch, or of the air by our feelings, we are apt to be deceived. This is easily illustrated. If I plunge one hand into water of exactly the heat of the body, and the other into water a few degrees warmer; both hands will soon feel alike; but the moment I cause them to exchange places, the hand taken

* In a temperate climate, the heat of the human body, as indicated by the thermometer placed under the tongue, is 98° Within the tropics it is higher, varying, with atmospheric changes, from 98½° to 101°. The general conclusion on the subject is this: that the temperature of man increases in passing from a cold or even temperate climate, into one that is warm; that the temperature of the inhabitants of warm climates is permanently higher than the temperature of those of mild; and that the temperature of different races of mankind, is, CŒTERIS PARIBUS, very much alike.—See a paper by DR. JOHN DAVY, in the Edin. Phil. Trans. No 14.

from the warmer water feels the new medium to be cold, and the other hand has the sensation of increased heat. The conclusion, therefore, is, that our sensations are not a correct index of temperature. And the converse of this is still more important, namely, that in all that concerns clothing and lodging, thermometrical indications of temperature are of less consequence than our sensations.

In no respect do individuals differ more than in sensibility to atmospheric changes. By some they are scarcely felt; while others evince a sense of them with almost the celerity of a mercurial instrument. This difference depends on various circumstances. Two healthy persons walk into the air, the one fatigued, the other fresh and lively; the first feels chilly, the other is perfectly comfortable: the state of the health makes a difference, also the mode of life; and more than all, constitution. These remarks apply more pointedly to children than to adults. On this subject BUFFON has uttered a most erroneous sentiment. He says, that however delicate the frame may be in infancy, "it is yet less sensible of cold than during any other season of life." Of the tenderness of infants in this respect we can only judge by what every one may witness, namely, that they are much sooner chilled than

adults. And few facts are better established, than, that intense cold increases infantile mortality in nearly the same ratio that it increases the mortality of the aged. In both cases its operation is probably the same. When long continued, it is one of the most powerful sedatives we know: as therefore the *quantum* of vital energy in the very young, and the very old is alike limited, neither, unless precaution is taken, can resist its influence.

The seasons have, no doubt, their distinct influence on the physical condition of the young. Summer, the most agreeable and upon the whole most healthful season for them, has its peculiar dangers. An infant in the arms exposed during the heat of the day will readily take cold in the evening. In the afternoon the nurse carries abroad her charge, which is lightly, and for the hour of the day, suitably dressed; relaxed and feeble, it falls asleep: the nurse prolongs her walk; the cool evening sets in; the infant becomes chilled; and by and by is carried home hoarse and sneezing. Many cases of croup, as well as other serious affections, arise from this cause.

In autumn the sun is still powerful. Infants may therefore be freely abroad at proper hours; but in the evening the moisture exhaled during

the day, owing to the increasing coldness of the season, descends in the form of heavy dews, or hoar frost, and scarcely fails to affect such as are exposed to it. Indeed, through the carelessness of those entrusted with children, exposure under such circumstances is extremely common. For my part, I know of no single cause of acute infantile disease so unerring in the production of its legitimate consequences.

During the cold and variable weather of the winter and spring, plain good sense is worth more, in the management of children, than a volume of rules and directions. Children ought certainly to breathe the fresh air every day in the year; but it does not follow that they are always for this purpose to be sent abroad. On the contrary, in a cold tempestuous day, large well ventilated apartments are the safest situations for amusement and exercise. I now allude to infants under their 4th or 5th year. After this age, when properly clothed, they may in general venture out at noon in every description of weather.

What is called the "Hardening system" has had many advocates. LOCKE, as we have already seen, gave it *eclat;* but it remained for ROUSSEAU to perfect it. He would, in the first place, have children always lightly clad, and not

suffer them to change their dress with the seasons. "It is much better," he observes, "to inure them to bear cold than heat. The former will never hurt them, if they are exposed to it early."* A little farther on, he seems to have no dread of his Camilius suffering from either extreme of temperature, and censures LOCKE for advising children against "drinking cold liquors when they are warm, or sitting on moist places on the ground;" for "little peasants and savages" use no such precautions. These are the absurdities of an eccentric theory, and might have been left unnoticed, were they not still in part maintained by rational men. We often hear the children of vagrants praised for their healthy looks; and it is true that such of them as we see are generally vigorous. But how large a proportion of the children of these people do we not see! We are assured by ADAM SMITH, concerning soldiers' families, which are exposed to similar hardships, that he was told by several officers of experience, that, so far from recruiting the regiment, they had never been able to supply it with drums and fifes from

* This latter notion reminds us of PETER THE GREAT'S attempt at an improved method of training children destined for the navy. He ordered them to be accustomed to drink nothing but sea water. All upon whom the experiment was tried died of course. ROUSSEAU was only a speculative philosopher, but the CZAR was eminently of the experimental school.

all the soldiers' children that were born in it. However it is probable that such of them as were reared would enjoy enviable health. A family under such circumstances is a kind of plantation, which Death appears to have special licence to thin; and he is too unsparing a woodman to leave any but vigorous plants.*

When children are sent abroad, their dress ought to be regulated by the season, the weather, the time of the day, the age, the state of the health, and still more by the feelings and the natural constitution of each individual. An infant in the arms should be carefully clothed, but not loaded with dress. On the other hand, when the child is of an age to take active exercise, there should be no muffling up of the body; even a great coat is to be forbidden, except in severe weather, when we have reason to believe the natural heat could not be maintained without it. The *softening system* is only not so bad as its

* For the purpose of ascertaining the amount of mortality among the children of the poor an inquiry was set on foot, at the British Lying-in Hospital, at the suggestion of Dr. COMBE. Of the applicants at that Charity during a long period "only one woman having borne as many as five children had reared them all; and one having had twelve had EIGHT living. But some having had four, had lost THREE; and five had lost FOUR; and six FIVE; and eight, SIX and SEVEN; and ten SEVEN and NINE; and women having borne eleven and twelve had lost EIGHT, NINE and TEN; and fourteen, EIGHT; and many who had borne four, five and six, had buried them all."

opposite; it is, however, very bad; and its effects —the habits it induces—are among the worst legacies that parental indulgence can leave to children. The surest way to further it, is, to be *over solicitous* about their warmth when out of doors. Clothe them suitably, by all means, but when that is done, let their own activity be trusted to for the rest.

The operation of moisture, in producing cold, when applied to the surface of the body, ought to be well understood. When a person's clothes are completely wet, or, in popular phrase, "when he is wet to the skin," evaporation, that is, the process of *drying*, commences; the heat of the body, in conjunction with the air's attraction for moisture, gradually converts the water into vapour, till the skin and clothes become dry. This vapour, at the moment of its formation, absorbs a large proportion of heat from the body: the person, meanwhile, if he remain inactive, becomes more and more chilled, till the same state is superinduced as during an immersion in the cool bath; differing in these respects, that it comes on gradually, lasts longer, and is followed by no salutary reaction. Should he, however, keep the blood in vigorous circulation by exercise, or if the mind be intensely occupied, the evaporation does not produce chilliness, and consequently is followed by no bad effects.

From these remarks we may deduce the following inference; when children get wet in taking their usual exercise, it is not absolutely necessary they should leave off on purpose to shift their dress: they are rather to be cautioned not to stand still, but to quicken their pace, that they may keep themselves warm. It is certain that no one catches cold till he feels cold; but danger begins the instant there is a general feeling of chilliness. Every one must have observed boys in skating get partially or completely wet, and yet finish the day's amusement without taking cold, or even feeling uncomfortable. Had they, in such a state, remained inactive, the consequences would no doubt have been different. On this subject, however, I should be sorry to be misunderstood. Though active exercise, in general, obviates danger; yet when a change of dress is at hand, it is unquestionably the preferable alternative.

Having stated these general principles which relate to exposure in the open air, the warming and ventilation of children's apartments claim some notice.

A commodious nursery is one important requisite in a family dwelling. It ought to be lofty, in an upper story, well lighted, and the windows, if practicable, towards the south.

For the sake of ventilation and occasional use, there should be an open fire place; but instead of warming this apartment by a common fire, the patent air-stove is to be preferred for that purpose; as it has several advantages over the other. In the first place, it may be set in the centre of the room so as to preserve an equable temperature throughout; while the common fire, by maintaining a constant draught, keeps the parts at a distance from it extremely cold. In the second place, the stove may be set so high, that those lamentable accidents by fire, of so frequent occurrence, can be easily guarded against:* and, lastly, by means of the regulator it is made to yield a degree of heat exactly suited to the state of the weather, or the circumstances of the inmates. The temperature of the nursery should range from 55 to about 65 degrees; for indicating which there ought to be a thermometer. Indeed this is an instrument that should be in every nursery, not only for the purpose just mentioned, but also for regulating the heat of the bath.

* The outer garments of children in the nursery, ought not to be of cotton, but of a fabric of wool and cotton, which is sufficiently light as an article of dress and not inflammable. Were this precaution adopted, the risk of these horrible accidents, that annually destroy hundreds of children, would be more effectually guarded against than by any other means.

If any kind of apartment requires ventilation more than another, it is a nursery. An infant will never thrive in a confined room, however favourably circumstanced in other respects. Whoever has visited the children's wards in even the best managed workhouses, must be aware of this. In no similar institution, perhaps, is more attention paid to the children's comfort than in the workhouse of this town, and yet of the many that are there, it would scarcely be possible to select one with the signs of blooming health, such as would readily be found in private families. The cause is, the crowded state of the apartments, and still more, inadequate ventilation.* In Foundling Hospitals the same evils exist in a highly aggravated degree; and, with other causes, produce incredible mortality.†

* On lately visiting the above establishment it was with regret I perceived that both the school rooms and the nursery were in the sunken story or cellar; to each of which it was necessary to descend from the yard by a flight of steps. These apartments, I should conceive, ought in such an institution to be in the attics.

† There is an interesting paper on "Foundling Hospitals," in the 1st volume of the Edin. Med. and Surg. Jour. from which I transcribe most of the following particulars. In 1791 it was stated to the Irish house of commons that, of 19,420 infants admitted into the Foundling Hospital of Dublin during the preceding 10 years, 17,420 were dead or unaccounted for: and, that, of 2180 admitted during the year 1790, only 187 were then alive. A committee of the same house gave in their report on this subject on the 8th of May 1797, by which it appears that, within the quarter ending the 25th of March last, 540 children were received into the Hospital, of whom in the same space of

Besides the means of ventilation already mentioned, there ought to be a ventilator in an upper pane of each nursery window, or, in several of the panes, when the apartment has only a single window. The unpleasant noise of these ventilators, when in motion, may be obviated by having the spindles to turn upon leather.

The fuel, whether for the nursery, or children's bed rooms, should never be coke or charcoal. The celerity with which it yields carbonic acid gas has been stated, as well as the property of that gas in gravitating to the floor. This latter circumstance (as children in their frolics frequently recline on the floor) might lead to injurious or even fatal consequences. The late DR. CLEGHORN of Glasgow used to relate in his clear and elegant manner, the following anecdote, as illustrative of this subject. A fur-

time 450 died. That from the 25th March to the 13th April (nineteen days) 116 infants were admitted, of which number there died 112. That within the last 6 years 12,786 had been admitted; died in the same time 12,651, leaving 135 children to the public. In the Princely Hospital of Vienna about one in 19 is preserved. In Moscow, with every advantage, out of 37,607 admitted in the course of 20 years, only 1020 were sent out. The mortality in the London workhouses used to be equally great.

At this time (in the middle of the 19th century!) the Parisian Foundling Hospital is said to be in most efficient operation. No perversion of benevolence was ever half so monstrous as the support of such establishments. They are a disgrace to any country, and by the licentiousness which they foster, inflict upon it, a just and fearful punishment.

nace in his class room had been heated with charcoal, an hour or two before the commencement of the lecture, preparatory to the performance of some chemical experiment. Near the furnace stood the Doctor's chair, and both in the lowest part of the room—somewhat lower than the front seat for the pupils. Soon after commencing his address the Dr. experienced a feeling of giddiness and stupefaction; and, by and by, fell from his seat to the floor in a state of insensibility. Being instantly carried into the air and having cold water dashed upon his head and face he revived.

This gentleman was famous for his frugality as an experimenter, as well as for the simplicity of his apparatus, which besides was seldom in good order. On examining the furnace, in the present instance, the flue was found to be partially stopped. This, by diminishing the draught which should have carried the gas upwards, allowed it to fall into the apartment to the imminent peril of the worthy lecturer's life.

Children's apartments ought not to be lighted up with gas. When the pipes do not leak, and the gas is completely burnt, it can do no other harm than by furnishing a light unnecessarily brilliant; but the reverse in both these respects frequently happens, as the abominable

odour of shops and other places into which it is admitted abundantly testifies. That coal gas (carburetted hydrogen chiefly) is noxious when breathed pure or largely mixed with the air, is proved by the experiments of Sir H. Davy: and even where the air has only a slight admixture, it produces in many persons intolerable sickness, and pain in the stomach. On this account it should never be brought in contact with the respiratory organs of children.*

* When carburetted hydrogen is respired in an undiluted state, it produces instant death by acting, apparently, as a direct sedative. When diffused in the atmosphere, in a small proportion only, it induces vertigo, loss of perception, and other symptoms of an alarming kind. Sir H. Davy's account of its effects on himself is well worth perusing.

SECTION VIII.

SLEEP.

"TAKE from man hope and sleep," says KANT, "and you will make him the most wretched being upon earth." One is ready to imagine that either of these singly would produce such an effect. But the deprivation of sleep brings with it other consequences than mental wretchedness: it ends in delirium and death. Some who possess great patience and vigour of mind, do with little sleep; but that little is essential. This peculiarity is most observable in middle age, and probably more in females than males. The endurance of some mothers in this respect is wonderful. We may see them for several successive weeks watch a sick child without perceptible repose; the intense occupation of the mind appearing to render it unnecessary. If there is hope of recovery, this, we may naturally suppose, is the best stimulus to wakefulness; but when there is no hope—when all that can be done is to soothe those sufferings, for which there is no opiate like a mother's lips and hands

—even the performance of this office will sustain nature without sleep for a length of time, which under other circumstances would destroy life.

Children need much sleep; the more, the younger they are. It would seem that the *fœtus in utero* passes its time in sleep: at least, if we may judge by what we observe in premature births. Infants of this description sleep, with little interruption till the completion of the usual term of gestation, wakening only to feed, and again relapse into slumber.

Sound sleep is a state in which volition is suspended, and the external senses are shut to ordinary impressions. It is evidently designed to repair the daily expenditure of nervous energy —of that *something* which communicates the will to the moving powers, and conveys the impressions on the senses to the mind. In the young, whose activity is incessant, and whose nervous energy is intense, but like the electricity of the Torpedo soon exhausted, frequent repose is necessary. Besides sleeping ten or twelve hours in the night, they sleep once or twice during the day; and for the first few weeks of life still oftener. When their sleep is short, or disturbed, we may conclude they are indisposed.

Mr. LOCKE remarks, that in waking children we should be careful not to do it "hastily, nor

with a loud shrill voice, or any other sudden violent noise. Be sure," says he, "to begin with a low call and some gentle motion, and draw them out of it by degrees." ROUSSEAU advises differently: "do not," says the latter, "enervate your pupil by indulging him in soft and uninterrupted slumbers, let him enjoy his rest at first without restraint, as the law of nature dictates; but forget not, that in society it is frequently necessary to be above that law: he should be used, therefore, as he grows up, to sit up late, and rise early; to be waked unexpectedly out of his sleep, and to sit occasionally all night without inconvenience." Were "when he has grown up," substituted for "as he grows up," the directions might by some be reckoned judicious; but I cannot help preferring the sentiment of the poet respecting children to that of the philosopher.

——why should they know their fate,
Since sorrow never comes too late,
And happiness too swiftly flies!
Thought would destroy their paradise.

"Early to bed, and early to rise" &c. is a sad doggerel; but it expresses a truth which deserves the best verse. Certainly the healthiest, wealthiest, and (in the proper sense) wisest portion of mankind, have been the most regular in this

particular. "When we establish such habits in our children, even when we fear they may not hold out beyond the age of twenty, it is well to accustom them to early rising, and early going to bed for the *present* improvement of their health, and other advantages."—LOCKE.

As soon as children awake, they should be made to rise. Indulgence in bed, or a second sleep, debilitates both mind and body, and is sometimes the occasion of that unfortunate habit, or affection—the *enuresis infantum.*

It has been disputed whether the cradle, swing-cot, or couch is to be preferred. This is a point generally left to the decision of the nurse. The old fashioned cradle on rockers is certainly the most liable to abuse. When violently rocked or jolted, it sickens and stupifies the infant, and is capable of making it sleep, when such is the will of the nurse, more than is either natural or proper. The swing-cot is less objectionable. It is an excellent contrivance for lessening the labour of nursing; and whatever learned folks may say to the contrary, will still maintain its place in the nursery. Some imagine that swinging and rocking dispose infants to *water in the brain.* That any violent motion must injure this organ is easily credited: but it is difficult to perceive what more harm will accrue from the

ordinary swinging of a cot than from the lulling motion on the mother's knee.

The cradle and cot are generally made too small. The canopy in particular often barely admits the infant's head under it. How the infant is to breathe seems never to be considered. Not only should the canopy be large and lofty, but instead of boards it should be made of the lightest frame work, and covered with green gauze.

There is one circumstance—the bane of nurseries—upon which it is difficult to speak too strongly, and that is the administering laudanum and other preparations of opium to infants. It is well known, or, ought to be, that laudanum, except in minute doses, is extremely poisonous to infants. Three or four drops will sometimes produce alarming consequences. The writer has witnessed effects of this kind, from so trifling a dose, as also from a small tea spoonful of the common opiate medicine—paregoric elixir. Numbers of infants connected with the public charities are injured and destroyed by this practice. They are hired out to nurse at a cheap rate. Their nurses have generally their own families to attend to, as well as other employments: of course it is felt as a convenience for an infant to sleep a great deal, and this, when

it does not happen naturally, is secured by laudanum, syrup of poppies, Godfrey's cordial, Dalby's carminative, and similar potions. When the infant awakes from a forced doze, stupified and miserable, its cries are a sufficient plea for a repetition of the opiate. In this way there is frequently no end to the evil till the sallow, emaciated, orphan is destroyed.*

It has been already remarked, that children, when well, sleep soundly. There may, however, be sleeplessness from irritable bowels, with no other appearance of indisposition. This is common, and requires the exercise of patience and humanity on the part of the nurse. Here there is strong inducement to give an opiate on purpose to secure comfortable nights; but if given merely to compel sleep—it is like covering up a fire, only to increase its violence. Opiu m in such a case is no doubt of great use when judi-

* It is probable that many of the children said to be smothered in bed by their nurses lying upon them, are destroyed by secret doses of laudanum, given to produce sleep. Among the "accidents" in the Swedish mortality tables from 1773 to 1795 are 493 children "overlaid" on an average annually. This is an incredible number to perish from such a cause, unless indeed it be possible that nurses in Sweden are even more drowsy than nurses elsewhere. In FRIEDLANDER'S excellent work (de l' education physique de l' homme,) we are informed that 40,000 infants were destroyed in a similar way, in England between the years 1686 and 1800! I cannot help thinkin g that the Register of these accidents must have been kept at Paris.

ciously administered, but then, it must be given in conjunction with other remedies, not used as a convenience.

In hot weather some children are fidgety and sleepless. This is peculiar to those of an irritable temperament. The remedy consists in taking off the dress and spunging the body with cold water. Its soothing effect is instantaneous.

Children's sleeping apartments and beds require a few remarks.

A bed room can scarcely be too large and lofty. It ought also to be in an upper story; and should be ventilated with at least as great care as was recommended with reference to the nursery. The dread of cold is often a plea for the want of ventilation in winter; but nothing can be more absurd. So far from its being right to exclude fresh air at certain seasons, I am persuaded it ought to be freely admitted every day in the year: and this requires attention more particularly when it is cold, as in hot weather it is not likely to be neglected. The sash should be kept raised throughout the day, and even a little raised in the night, unless indeed there be a ventilator in the window—a precaution I would recommend, as well as having an open fire place in the apartment.

As to a bed—a hair mattress is preferable at all seasons to a couch of feathers or down. The latter for children is little better than a nightly vapour bath: sunk in it, they soon drip with perspiration; so that their dress as well as bedding is completely wet. If any practice is more calculated than another to make children tender, it is this. Bed curtains are also improper, except what may be required in forming a canopy to shade the pillow.*

For the sake of health, as well as delicacy, few children only should sleep in the same chamber: but the idea of some, that two ought not to occupy the same bed, is strange indeed, if it is meant as applicable to children of the same family. When we see infants—brothers and sisters—asleep in each others arms, it is impossible not to feel that such a separation would ill comport with that affection for each other, which is so uniformly manifested at their age; and which a parent must wish to cherish and perpetuate. In every family, however, and especially in boarding schools there

* Concealed or press beds are obviously objectionable. They are common in Scotland, and are an evil almost inseparable from the practice of living in flats where the number of lodging rooms is generally too limited. They are the invention of a rude age, and their use ought long since tohave been exploded.

are considerations of a moral kind arising, in connection with this subject, long before the completion of childhood. These, I forbear alluding to more particularly, as they are better left to the discretion and correct feeling of parents, and superintendents of seminaries, than made the theme of written dissertations, however delicately handled.

The posture in bed is of some consequence. A child should be taught to lie on his side. Lying on the back is well known to produce the night mare and disturbed sleep. According to Mr. C. Bell it is also the ordinary cause of the *enuresis infantum*, which, he assures us, may in general be readily cured, by the child accustoming himself to sleep upon his face or side.

In the management of children, nothing is *unimportant*, if it in the least bears upon the health. The temperature of the feet in bed, though apparently a trifling consideration, is to be carefully attended to. Some children are put to bed, invariably, with cold feet: this happens particularly in the case of young girls. It is an inseparable attendant on their sedentary mode of life; being experienced more or less by every female who passes through the ordeal of a *finished* education. To spend a single night with the feet cold, gives rise to interrupted

sleep, frightful dreams, headach, and some affection (it may be slight) of the digestive organs: the same continued for many months, will go far in undermining the most vigorous constitution, besides maiming and disfiguring the extremities with chilblains. The coldness of the feet, though the immediate, is not the primary cause of the above symptoms, but is itself in a great degree an effect of that languid state of the circulation produced by a sedentary mode of education, in which the mind receives much attention, and the body very little; unless indeed we except some attempts at improving the figure by the use of back boards, stretching machines, and other well-meant contrivances, not hitherto very successful, of which some notice will be taken in the section on exercise.*

For cold feet no remedy equals active exercise. A brisk romp before lying down is decidedly preferable to warming the bed. Having alluded to the warming pan, I would suggest that it should never be permitted to healthy children, however severe the weather. It is a resource of

*In winter, children, when they are in bed, should have their feet examined occasionally with a view to ascertaining their temperature. This is more particularly necessary in girls' schools. Were it generally attended to, the prevalence of chilblains, in such situations, might be abated or entirely obviated.

comfort for grown people, the feeble and the solitary; but the young do not require it. Let them have sufficient covering; let their feet, if necessary, be enveloped in fur socks, and their own warmth will assuredly suffice. A cold bed resembles a cold bath, and is in a similar way beneficial.

SECTION IX.

OF EXERCISE AND AMUSEMENT.

A child in health is as prone to mirth and action as it is to eat or to breathe. To have perfect stillness enjoined for even the space of half an hour would be felt as no slight punishment; if indeed any child could submit to such an experiment. This uncontrollable activity is also observable in the young of all quadrupeds; and perhaps it attaches to other kinds of animals with whose habits we are less conversant. It is one of the grand characteristics of life at an age when the vital flame burns vividly, and the senses are intensely engaged, feeling their way in a world where all is new and wonderful.

That the exercise of this muscular energy is necessary to the health and growth of the body, appears from the fact that *both* are promoted or diminished in proportion as it has more or less freely its natural scope. When restrained, as happens in the case of the wretched inmates of Foundling Hospitals, instead of vigorous animated creatures with clear complexions and firm

limbs, we have a sallow, stunted, listless race, fitted only, should they grow up, to propagate disease and degeneracy.

It has been stated that a limb becomes weak and emaciated if it remains inactive for only a few weeks, as in the case of a fractured bone, or palsy. That inaction of the muscles is the sole cause of such effects is evident; for no sooner is the power of motion restored and in exercise, than the limb begins to recover its former plumpness and vigour. What happens in one member takes place in the whole body, when similarly circumstanced. A person long bed-rid from some accident not particularly affecting the general health, becomes feeble and emaciated; but this condition changes as the power of taking exercise returns.

This subject is well illustrated by facts of an opposite kind. The inordinate exercise of particular members of the body, acquires for them a disproportionate size and strength. Thus the arms, shoulders, and breast of the blacksmith and waterman are, in general, disproportionably fleshy and powerful; so are the sides of the coal-heaver; the limbs of the opera dancer; the necks of those who carry burdens on the head; the arms of the sawyer &c. It is on this principle we are to account for the surprising dexterity and

force shown by the different kinds of mechanics in the use of their particular tools.

The manner in which exercise affects the muscles is difficult or impossible to be explained. Perhaps it acts by maintaining a vigorous circulation of blood in a particular part, when it is partial, and in the whole muscular frame when it is general; in this way promoting expansion and growth. Exercise also invigorates the nerves; for the power of the will over any member is soon weakened, or altogether lost, when it ceases to be regularly asserted.

In directing the exercise of infants, the following rules are to be observed.

First....As infants, at a very early age, exercise themselves instinctively by stretching and tossing their limbs, they should be frequently laid in postures favourable to such motions, and care taken that the dress is in no respect an impediment. Crying and laughing are also modes of exercise. The former is not always an expression of pain, but occasionally an instinctive effort to quicken the circulation, particularly in the lungs. Nor should laughter be too much excited and encouraged; for, though beneficial when moderate, it is certain, when excessive, to be followed by exhaustion: hence the sudden transition we often see from laughter to crying.

Second....When an infant is carried about, which he ought to be often, both within doors and without, it is important that his nurse be of the proper age and strength for her duty. An infant cannot be held or carried comfortably by a weak nurse. On the other hand, a nurse who has more strength than prudence may be equally injurious. All violent tossing in the arms, attempts to make the child sit upright before it has the requisite strength, awkward postures, as the head hanging downwards, or to one side; or, the body held crooked; in short, every position in which the infant is not perfectly at ease, may be hurtful, and ought to be avoided. The same applies to lifting or carrying an infant by one arm, twisting the joints in attempts to fit on the dress, particularly the sleeves of certain garments, also the stockings and shoes.

Third.. .When a child begins to walk, and for some time previous, he ought to be left to his own efforts. His preliminary exercises of crawling and tumbling ought not to be interfered with: *teaching to walk*, as it is called, is absurd officiousness. He is certain to walk when he is able. It may be true that a quadruped walks at once. His being a *quadruped* is the principal reason. His body rests upon four limbs; but that of an infant upon two; which is argument

sufficient why the limbs of the latter should not be too early tried. Moreover there is in an infant a progressive series of exercises preparatory to walking. The first is crawling, which strengthens the muscles: the next balancing the body upright, by laying hold of an object; then walking by the wall; standing alone; and, finally, the unaided "first step in life."

Fourth.....The exercise and amusements of children should be pursued in the open air, or when the weather is unfavourable, in a well ventilated nursery. Exercise without air loses half its value: hence I would have the hobby-horse to amble on the leads or in the play-ground. In a town, every house, where it can be accomplished, should have a spacious yard attached to it; this will be found of singular advantage to children, and will more than counterbalance whatever curtailment of the size or conveniences of the dwelling may have been made in obtaining it. If well gravelled, it will generally be dry, and admit of children following their sports in the air, at times, as in winter, when the state of the streets would prevent, at least the very young, from going abroad.

Fifth....Exercise pursued to extreme fatigue is hurtful, and may even be dangerous. The reason has to be stated. Children after hard

play, are often found to take cold, which is generally attributed to the dampness of the air. The same thing will happen, however, when the air is dry. Over-fatigue is the sole cause. It exhausts the nervous energy; and this, together with profuse perspiration, reduces the temperature of the body below the natural standard, thereby disposing it to be injured by degrees of exposure, which otherwise would be harmless: Children ought to be made acquainted with this fact. They should be cautioned either to continue their exercise so as to maintain the body of the ordinary heat, or to take shelter. Sitting, or standing still in the air in such a state of exhaustion, is to invite disease.

Sixth....When children in a town arrive at an age for being educated, they ought to be sent to a day school situate at a proper distance from their own residence. I am persuaded this is of much importance, as it provides a motive for daily exercise, which operates more regularly than any other. Many families have been known to enjoy excellent health so long as they pursued this practice, that soon became sickly on being confined to domestic tuition. The latter system is common; perhaps it is gaining ground; it may answer in the country: but when it is adopted by a large family, in a town, it will be

found extremely difficult to maintain them in comfortable health. Why should not the two systems be combined? Why might not domestic tuition occupy one half of the day, and attendance at a distance the other. The great evil of instruction exclusively at home is the difficulty of securing regular exercise. A walk when it is fine only, is a poor substitute for the regular *turn out* to a day school in all kinds of weather. When children (I allude to girls particularly) are never sent abroad but when the sun shines, they soon become tender, and readily take cold. This is too often converted into a reason for more cautious exposure till, by and by, a slight shower, or a gust of wind is made a plea for perfect seclusion. Besides, in most families there are children of opposite dispositions: some active, and that will be abroad on every occasion; while others, indolent or studious, are averse to exercise and never stir out without a strong inducement. Hence, for this latter class, a day school presents the best motive for taking the air, because it is one equally powerful and regular.

Games and Amusements.

BOYS....When boys are in health, they seldom require incentives to activity. If time and space are allowed, they are sure to avail themselves of both. Most of the juvenile games in this country

are well fitted to ensure exercise and amusement which are the grand design of all gymnastics. Even in the nursery we have abundant resources of this kind, many of our toys being well contrived to afford the simplest rudiments of knowledge, with active pastime. Among several of this character, none pleases me better than pieces of wood squared after the manner of bricks. These have the advantage of being simple, durable, convertible to many purposes of amusement, and not calculated in any way to injure the operators. A spectator cannot but be amused at the ingenuity, adroitness, and glee of the tiny architects in building with their squares They can build castles as well as their seniors, and demolish them as quickly, and with a better grace. Their pyramids and obelisks too, are far from being contemptible; differing from those of grown children in being more innocently raised, and falling a little sooner. In other respects the difference is trivial.

A child should not be furnished with a great variety of toys. This is sure to blunt curiosity, and may be said to cloy the mental appetite, as too much food satiates the stomach: in either case the consequences are similar. The child becomes discontented and capricious: a fresh toy affords little pleasure; it is soon thrown away or

broken; and something novel is again craved, to be as quickly disposed of in the same manner. Children over indulged in this way are certainly objects of pity. Novelties which others would handle with delight afford them little or no gratification: the finest toy is received with sullen indifference, or full as often, with a display of the *destructive* faculty fit to delight a phrenologist. It is this unlimited power which forms the tyrant. Such a child will be quite as ready to domineer over his playmates, as over his Dutch dolls.

Hence we learn that a profusion of toys does not confer happiness, and that to be fully enjoyed they must be few, whether they be the toys of children, or grown people. An inference, however, which it must be owned has more the merit of truth than originality.

When boys relinquish nursery amusements for more manly sports, the principal point to be seen to, is, that they do not adopt any which may endanger life, or limb; such as the use of gun-powder, fire-arms, bow and arrows, and certain edge tools. This precaution is the more needful, as boys are generally fond of an implement in proportion as it is dangerous. The loss of eye sight, burns, and mutilations, so frequently caused by gunpowder in juvenile

hands, are warnings that no parent should neglect. At the same time I should not prohibit boys from any manly sport, though attended with some risk, when it is pursued under the eye and guidance of an experienced person.

Of the various juvenile games the following are the best: bowling, foot-ball, fives, prison-bars, quoits, cricket, nine-pins, shinty. There are many others besides, all of which are played in the open air, require agility, with the exercise of some skill and address, and are followed without personal hazard. Of a different kind, are such feats of strength and agility as raising heavy weights, straining leaps, standing on the head or the hands, with some others, which should be classed among forbidden sports.

After all, boys should be very little curbed in the choice of their amusements. The selection of games may be left to individual taste, which is sure to adopt only such as will be pursued with ardour. The great aim of all sports being the acquirement of muscular vigour, address, and presence of mind, those that please the best are the most proper, as being most likely to answer this end.

In the country, children are never at a loss for amusements. "They can hunt butterflies, collect flowers, build little houses, and attend to the growth of trees and plants"* which leaves

* STRUVE.

little occasion for artificial playthings, at least in the few first years of life. But what is to be said of children that inhabit the narrow streets, and murky atmosphere of a large city? Surely some provision for their recreation is due from those who build towns, were it only in compensation for the deprivation of the commonest bounties—the sun, the sky, and the green face of nature. In most large towns pleasure grounds and public walks are set apart for the health and amusement of the inhabitants. The want of these in Manchester has been already adverted to.* Considering the extraordinary extension of the town of late, and its probable increase, this is a subject for deep regret. It would certainly be well, were the legislature to enact that towns should be built or extended so far after a plan, as that plots of land at certain intervals might be reserved for the purposes to which I have alluded. Without some such enactment, a lucrative ground-rent will always be preferred to considerations of public Hygiene.

GIRLS...." It is extremely absurd," as STRUVE a German writer observes, " to condemn young females almost from their cradle to a sedentary life, by giving them scarcely any other playthings than dolls and tinsel work, or trinkets;

* See page 39.

while the sprightly boy amuses himself with his noisy drum, and other active diversions." This remark is no where more applicable than in our own country. Here, the girl is not more unlike the boy in dress than in habits. For this it is impossible to assign an adequate reason. If the sexes differ but little in their physical structure: if they breathe the same air, digest the same food, have duties and difficulties before them equally arduous, how comes it that, while the one is encouraged to strengthen the frame by exposure and exercise, the other is trained in seclusion, stigmatized as a romp for every exhibition of vivacity; and, saving the accomplishment of dancing, which in this climate can only be practised within doors, debarred from every active exercise; her occupations and amusements equally tending to produce indolence and muscular debility? No other answer, I imagine, can be given, than that it is one of the *dicta* of fashion, which decrees that adventitious, are preferable to natural accomplishments. Such was not the opinion of the "Dorian mothers," and if a mode of education is, like a tree, to be judged of by its fruits, that of the Greeks, notwithstanding it is a thread-bare theme, still deserves our attention.

Waving this point, it seems to me that girls

are injudiciously, at a very early age, put to certain branches of education, which, besides requiring much confinement, accustom the body to awkward positions: I allude particularly to music, drawing, penmanship, and accounts. I am persuaded little is gained by attempting to instruct children very early. The infantile mind and body are alike feeble and irritable. As we should not think of laying a heavy burden on the shoulders of an infant, nor indeed any sensible burden, knowing there is neither strength nor patience to bear it; so neither ought the mind in such a case to be more taxed. So irritable is the mind at this period of life, that an attempt to keep it directed, for any length of time, to objects even of an agreeable and amusing nature, soon produces intolerable impatience. We witness something of this also in children of a more advanced age, when long confined in school or in manufactories; as the hour of dismissal approaches, every minute seems lengthened to five: they yawn and feel listless and wretched; but the instant they are set at liberty, their freaks and gambols defy control. It is this impatience of restraint and of continued attention to a specific object (and the younger the child the greater the impatience) which is never to be lost sight of. To enforce docility

and application in an infant is a mere outrage upon nature.*

It may be asked, at what age, then, are we to confine children for the purpose of instructing them? This I do not take upon me to determine precisely. I am satisfied, however, that it is better to err in beginning too late than too early. During the first few years of life, there is a remarkable curiosity, which in general is most profitably engaged, when left to its own bent; as it is never at rest, except when overcome by hunger or sleep. In this way more is learned by the mere impulse of instinct than could be taught by the most rigorous discipline.†

* The following whimsical sentiments of an anonymous writer I do not quote with entire approbation, but as illustrating what has just been said.—"It is a favourite theme, with poets, to expatiate on the happiness of childhood. My experience is different. At this age a thousand desires, fanciful and real, are continually craving, and as constantly obliged to be repressed. In the morning it is irksome to hasten, through the beautiful glens and fields, to school, and, unlike every other animated object in the landscape, be under restraint. At mid-day, when heated with play, what so horrible as to leave it at a moment's warning for dull books and stern discipline! And, in the evening, how delightful to loiter with school-fellows on the green banks, pursuing the dreaming fancies or wild frolics of youth! but then one is constrained to be home at the usual hour."

† There is no doubt that Infants' schools will soon become general, in our commercial and manufacturing towns. So long as they are conducted as at present—the school rooms large, lofty, clean, and well ventilated, and the infants beguiled into knowledge, instead of being compelled to learn—so long will they secure the support of the enlightened benevolent. But if it ever happen that a more rigorous mode of

These remarks may help us to appreciate the wisdom of attempts to foster precocity of intellect. If we succeed in forming an acute mind, (which is unlikely) we shall have a feeble body. In general it is the *body* only, which eventually indicates this kind of interference.

In educating young females, it is a common ambition that they should be very accomplished. This might be well, were it not also attempted to make them all equally accomplished; as if every girl had the same taste, capacity, and physical strength. Music, drawing, painting, languages, with other branches, compose a routine from which it would appear there can be no deviation. This reminds us of military drill, where every fresh recruit is supposed competent to learn all the manœuvres. The mind, however, is not so pliable. How often do we see a delicate child obliged to sit at her music for hours daily, and, in a majority of instances, without the possibility of being, even in a pleasing degree, proficient.

There may be as little taste for various other attainments which are coveted: and yet the

instruction be introduced; or if the care now taken in providing airy and pleasant rooms, kind and patient teachers, and judicious superintendents, be in the least abated (and there is danger of all this) that instant Infants' schools will become a public evil.

health of the child is remorselessly staked in such a lottery, in spite of the risk of blanks! This is surely the dotage of folly. Let every branch of a refined education be estimated as it merits: each is no doubt desirable when its acquisition can be judiciously attempted—when it does not involve a sacrifice of health and vivacity, together with the symmetry of the body: but when such a sacrifice has been made, accomplishments shine only like the tinsel that ornaments a coffin; and are equally worthless.

The amusements of girls are far too sedentary. Skipping the rope is their best sport, and generally has the advantage of being practised in the open air. Dumb-bells, pulling at a weight over a pulley, after the manner of change ringing, and some others of boarding school invention, are, to say the least, very bad. No exercise should be recommended which is not calculated to amuse: these do not amuse, and are therefore an intolerable drudgery. Besides they are practised within doors, which of itself is a weighty objection: a game at ball, or at tick, in the open play ground, is a thousand times preferable to all such pedantic machinery.*

* When girls at our boarding schools have so little leisure for out-door amusement, the little liberty they have, ought to be Liberty in its strict sense. They should be under no kind of restraint, but enjoy the free exercise of their limbs,

Why might not female archery be revived? It is neither incompatible with grace nor delicacy. Every seminary for girls should also have the means of riding. A certain number of ponies or donkeys might easily be kept. Three would serve twelve pupils. On the donkeys at least there could be no risk of accidents. Where it is prudently resolved, on the score of health, to decline certain acquirements of a sedentary character, a parent may readily direct his child to others equally ornamental, and probably more solid than those relinquished. Of this description are botany and mineralogy. The pursuit of these combines instruction with healthful exercise. A taste for the cultivation of flowers should be also encouraged: and where it is practicable, every pupil ought to have the management of a small plot of garden ground. Emulation would excite diligence in this pursuit, and diligence would produce skill. The result would be equally pleasing and beneficial. In the great

and of whatever sport suits individual inclination. Instead of this they are generally obliged to walk in pairs arm in arm, to mingle decorum with mirth, or, rather, to be merry by rule; and all for fear they become rude and unsettled in their gestures and carriage! Cowper, I think it was, considered the movements of the kitten in play, as the BEAU IDEAL of gracefulness; yet whoever heard of kittens gamboling methodically and in couples!

school at Ackworth in Yorkshire, there is, I believe, some arrangement of this kind, and no school presents, in the details of its management, more that is worthy of imitation.

There are certain practices much in vogue in seminaries, not of the nature of exercise, but designed to improve the shape and carriage. Such are the wearing of stiff back boards, the use of reclining plains, and some others. In this way the lively girl, besides submitting to many hours' confinement daily for the improvement of her mind, has further discipline to undergo for her figure's sake: and when so much is to be done for both mind and body, no wonder the day is too short for all its duties—too short, at least, to admit of sufficient relaxation. The poet accounted it a delightful task, "to teach the young idea how to *shoot*," supposing, no doubt, that *this process*, as respects the body, might be safely left to nature. In this it would seem he was mistaken, as many appear to consider the "*shooting*" of the latter a fit subject for interference. In thus alluding to those who have the conducting of seminaries for young females, I am aware I allude to a class of ladies whose moral character and intellectual accomplishments are of the highest order; and whose energies are devoted to the most responsible

and praise-worthy of all undertakings. I would therefore suggest, with deference and respect, whether, instead of the practices which have been hinted at, a little more liberty for amusement in the open air, might not be substituted with very great advantage to their pupils.

SECTION X.

ON DERANGEMENT OF THE ALIMENTARY CANAL, WITH REMARKS ON THE MANAGEMENT OF THE BOWELS.

A child may be said to be in health, when the appetite is natural, and the bowels are moved at least once in the day, the fœces being proper in respect of quantity, consistence, and colour.

The following are some of the more general indications of infantile health; the countenance animated, and wearing an air of contentment; the eyes clear and bright, with the pupils lively and small; the cheeks rather brown than red; the lips scarlet, smooth, and full; the hair sleek, becoming glossy when combed; the skin soft, smooth, and having an elastic feel when pinched; the abdomen small, the flanks especially being free from distention; the gums, tongue, and general lining of the mouth, clean, moist, and of a pale red: the breath sweet, or fragrant; the breathing calm and occurring in sleep once for four beats of the pulse; the sleep tranquil and long continued; the child, on waking, cheerful

and evidently refreshed; the appetite keen, satisfied with a meal, and returning at short and regular intervals; the motions (there should be at least one, and not more than three daily) light yellow, and in general so soft as not to be figured. With regard to the animal powers, there is a degree of sprightliness and activity, varying of course in different children. When there is langour, (except it be from fatigue or heat) we may be sure the health is in some way affected.

The diseases of infancy and childhood, we have seen, are numerous and fatal. In the same periods of life, the system is likewise extremely liable to transient derangement from slight causes. It has already been remarked that disorder of the first passages from errors in diet, and from other circumstances incident to children, is frequent, and forms a most important feature in their pathological history. It would seem to precede and attend most of their diseases, and as an idiopathic affection, it is daily met with of various degrees of severity, from an ephemeral fit of indigestion to chronic marasmus.

It is not always easy to say of a child whether or not the *primæ viæ* are in order. The first shades of deviation from the healthy state are sometimes extremely obscure. Many children

considered to be upon the whole in health, are nevertheless on the verge of indisposition; they may be considered as occupying a kind of neutral ground; they are not in perfect health, nor yet under the influence of tangible disease. But such a state is seldom of long duration. It may be said to invite morbific causes. And as the blow fly deposits her *ova* only where a *nidus* is prepared, so here, disease finding a *nidus*, soon make its effects visible.*

Though the signs of derangement are thus obscured at first, some of them, ere long, become

* There can be no doubt that previous to the commencement of any disease, there is a state of predisposition, which fits or prepares the system for being acted upon by the morbific cause. This applies as well to diseases which operate by a specific infection peculiar to each, as to those which arise from incidental causes, as cold, intemperance, and the like. Every day's experience illustrates this fact. Of a number of children equally exposed, and as far as can be judged, equally liable to a particular infectious complaint, the majority, perhaps shall escape; and yet, on being similarly, or even more slightly, exposed, on another occasion, to the same infection, these latter readily take the disease. Exposure to cold will, at one time, produce a febrile complaint, at another, though more severe, be followed by no unpleasant symptom; and this without the individual being able to account for the difference. Excess also in eating and drinking will, in the same person, on one occasion, produce serious disorder, and at another time, though the excess be greater, it may be borne with impunity. These variations in the degree of susceptibility to morbid impressions, are extremely curious, and no doubt depend on variations in the state of the individual's health. In children (whose health is exposed to disturbance from slighter and less complicated causes than that of adults) such differences probably depend upon the state of the primæ viæ; at least there are circumstances observable in the commencement of most infantile diseases which favour this opinion.

palpable, and furnish indications which cannot be mistaken. Of these, none merits more attention than a certain degree of *tumidity of the abdomen.* Indeed, I consider this is a valuable and interesting symptom, not only because it may be noticed in almost every case, but particularly from the fact, that its removal by the proper means generally secures the disappearance of all the other signs of disorder.

Tumidity of the abdomen in connexion with derangement of the digestive organs, is to be observed at every age under puberty; but is most remarkable before the fifth year. Under this period, the abdominal muscles have little tonic vigour, and are readily elongated by distension from within. Hence, and from the comparative smallness of the pelvis, arise the striking enlargement of the abdomen after a meal, and the facility with which the fæces and flatus accumulate in the intestines. From this latter cricumstance proceeds the tumidity in question. As early as the first week after birth it is occasionally to be found, depending on retention of the *meconium.* It is always most remarkable in feeble and rickety children, and in such as are strongly predisposed to scrofula. The more constitutionally feeble, the greater is the disposition to the retention of the fæces. Indeed

I consider the degree of liability to the tumid abdomen as one of the best tests of the comparative natural vigour of different children.

The symptoms which indicate a deviation from health, and the commencement of fæcal accumulation in the bowels, are generally these: the child hitherto may have appeared well, and the state of his bowels in particular have presented nothing worthy of notice. It now begins to be remarked that his motions are small, and that he does not visit the close-stool at the usual hour, but irregularly, or misses now and then for a day. For some time these circumstances are little regarded, as the spirits, looks, and appetite, remain nearly as before. By and by, his colour is perceived to vary; he is alternately pale and flushed; is irritable and difficult to please; and the nurse will remark, that of late, his flesh has felt unusually soft. He now begins to quarrel with his breakfast, has little desire for his meals at the regular hours, but will eat, at other seasons, sometimes, too largely, and at others, little, the stomach never relishing long the same kinds of food. This organ also becomes irritable, rejecting certain articles by vomiting, and nothing so readily as milk. Headach is complained of, either by words or signs; there is a short cough; occasional pain in the belly; and

looseness generally comes on, sometimes white and slimy, at other times, green, or like yolk of eggs, or inky, or a mixture of these; but whatever be the appearance of the fæces, their odour is invariably pungent and offensive. The urine for the most part is scanty and high coloured, depositing, as it cools, a white sediment, which, on being stirred, gives the whole a resemblance to boiled whey. The breath is always more or less offensive; the tongue white; the skin clammy, or dry and rough, and so loosely attached to the muscles as to be easily pinched into a thin fold; the countenance is unusually sallow; the sleep broken by starting and restlessness; and the child, without apparent cause, has fits of crying. At this period, there is some emaciation; but the loss of weight, when the child is in the arms, is felt to be greater than could have been expected from the little change, as yet decernible, in the plumpness and size of the body. The abdomen, on being uncovered, presents appearances which differ according to the length of time that the fæcal accumulation has been in progress, the degree of attendant looseness, and some other circumstances. When the symptoms have been only of two or three weeks duration, we find it prominent in front, pretty much as if it contained an

inflated bladder of moderate size. When of long standing, the appearance is different. Besides the fulness anteriorly, the flanks become distended; and thus a broad unsightly protuberance is produced.*

Such is the state (excepting the latter appearance) of many children in towns, who are considered to be in tolerable health, and who continue thus, or with slight variation, for weeks, or even months. Occasionally a smart looseness or a change of diet or air, produces considerable amendment, or removes the disorder. At other times, some of the following diseases supervene: the infantile remittent fever; oppression of the cerebrum; diarrhœa; or convulsions. Not unfrequently, however, the above symptoms, especially in the feeble and rickety, are prolonged and increased. The appetite becomes voracious, constantly craving high seasoned food; the countenance sallow and emaciated, with a tumid upper lip, and the nostrils œdematous, and edged with scabs or ulcerated; the eye is heavy, with the pupil sluggish and dilated; the hair harsh and dry: in young infants it is sometimes like floss silk. The stools are occasionally

* In order to judge correctly of the abdominal tumidity, our examination ought to be made when the stomach is empty, that is, just before a meal.

scanty, but oftener profuse and thin, and of a most offensive odour; in appearance, sometimes resembling the chylous diarrhœa of authors. At this stage of the disorder the looseness seldom reduces, in any considerable degree, the size of the abdomen, which forms a remarkable contrast with the general emaciation.

The above symptoms are often considered as indicating *tabes mesenterica.* No doubt they often precede it. But that disease is to be distinguished, at least in its advanced stages, by other symptoms: of these, besides the enlargement of the mesenteric glands, which may sometimes be felt by manual examination, pain in the belly shooting into the back; pearly whiteness of the conjunctiva; variable, but generally insatiable appetite; and profuse lienteric purging, which resists the usual remedies, are most worthy of remark.*

Nothing is more common than for morbid retention of the fæces to be mistaken for worms in the intestines. I believe we seldom have the latter without the former; but worms are com-

* After all, scrofulous affection of the mesentery is, for the most part, very obscure, being often confounded with other complaints, particularly tuberculous disease. The account of symptoms we have in books shews that the latter has generally been mistaken for tabes mesenterica—an error which the accuracy of modern pathology has exposed.

paratively a rare disease. The belief of its frequent occurrence is maintained by the circumstance of most *vermifuges* being purgative. By their use the symptoms supposed to indicate *vermes*, are abated, and the fame of the remedies wonderfully established. It is true that in these cases no worms are seen in the motions, but then there is abundance of slime instead, which, by the help of a little ingenuity, is discovered to be worms reduced to this state through the potency of the remedy! What the precise indications are of worms in the intestines, unless it be their appearance in the stools, I know not; as I think I have often seen all the other signs, which are said to be distinctive of their presence, removed, without its being possible to detect them in the excrements.

Sluggish action of the bowels is the curse of towns. This is true of adults as well as children, but especially of the latter, who suffer from it oftener than is suspected. In the open country, the bowels of children act with the same vigour as their limbs; the system has no weak point: every organ is in tone, and the harmonious result is health, felt in the enjoyment of every sense and the perfection of every function.

The difference in this respect, between the influence of the town and country, has particu-

larly struck me, on occasionally examining those children that are brought, on a stated morning, weekly, to the Manchester Lying-in Hospital, for the purpose of being vaccinated. None are expected to be brought except the healthy. On this account, one seldom sees a finer assemblage of children (the average number is about fifteen) than this presents on a general inspection; but when examined individually, I have always discovered several with more or less unnatural fulness of the abdomen, and some of the other symptoms which usually accompany it. On every occasion, I have found that the readiest way of detecting this morbid state was by examining the arm with reference to its firmness. If the skin was loose and easily pinched into a thin fold between the finger and thumb, I have rarely been deceived in predicting the presence of tumid belly, and derangement of the stomach. The fat which loads the cellular membrane in early life, and every where cushions the skin, unquestionably furnishes a delicate test of the state of the health. Its absorption is one of the earliest and least equivocal signs of the derangement of the viscera; on which account, whenever the skin begins to be flabby, unless there be some other manifest cause, we are to suspect disorder of the *primæ viæ*, particularly retention of the fæces.

Nature and Causes of morbid Constipation.

It is necessary to distinguish two kinds of constipation: one is habitual or constitutional, and being unconnected with derangement of the system, is compatible with health. It is rare in childhood, and when it occurs is not to be treated as disorder. The other, which co-exists with debility or derangement of the stomach, I would call morbid constipation: it gives rise to the tumidity of the abdomen already described. In either species the fæcal accumulation takes place in the large intestines only: neither the fæces nor even the *meconium* is in any instance found higher than the cœcum. The immediate cause of the unusual retention in question is very obscure; the small intestines do not, so far as we know, evince a similar want of propulsive action. Perhaps the thinness of their contents renders the propulsion more easy. Be this as it may, the torpidity of the lower bowels is difficult to be accounted for; and though there are several theories on the subject, none of them are very satisfactory. Some think it depends on debility of the muscular coat of the bowels, which are therefore unable to move the recrement onwards, as they do in health: others refer it to the rigidity of the muscular fibres, in some way hitherto unexplained, retarding the peristaltic

action. Another assigned cause, is the over-activity of the absorbents, which leave the fæces too much inspissated to be easily passed along the intestinal canal. Each of these causes may, perhaps, have its application under particular circumstances. With regard to the first—debility of the muscular coat—we certainly witness the highest degree of tumid abdomen depending on retained fæces, with general feebleness of the system, while, at the same time, there is profuse diarrhœa, the lower intestines appearing to propel, with great celerity, the more liquid matters, which pass into them from the ilium, and yet retaining their own feculent contents. Here sluggishness of the muscular coat, whatever may be said of its debility, cannot be assigned as the cause of the fæcal retention, since there is evidently a rapid peristaltic action; and yet, if it ever be a cause, we should expect it to be effective in such a case. As to over-activity of the absorbents, it cannot be reckoned to produce constipation in children: it may have that tendency in vigorous people—in those, for instance, who perspire freely; though even in that case, the effect may be otherwise explained. It appears to me that a morbid condition of the mucous membrane of the large intestines, produces the constipation in question; but the

nature of that state is perhaps beyond the reach of investigation. In health, we know there is a plentiful mucous secretion from this membrane—the *succus intestinalis*—which mingles with the contents of the intestinal canal, and facilitates their passage. In constipation, this would appear to be suppressed or altered in its properties, so that the feculent matters are not passed on; but become adherent to, and coat the bowels. Without attempting further to define this morbid alteration, there can be no doubt it is in most, if not all cases, connected with a similar condition of the stomach. There is evidently an intimate and important sympathy between this organ and the lower bowels. When the former is vigorous, the latter are so likewise, at least in a degree adequate to the maintenance of health: but when the stomach is feeble, or when it becomes deranged, the healthy action of the lower bowels is likewise affected. This is particularly remarkable in delicate children.

It has been already stated that the tumidity of the abdomen is owing to the retention of fæces and flatus in the large intestines. The flatus is always in considerable volume. The quantity of fæces sometimes expelled in such cases, by a course of purgatives, is enormous, and might well be thought adequate to produce the tumidity

alone; but I am far from thinking that such a discharge consists only of the contents of the intestines; on the contrary, it is partly a feculent secretion from the lining of the bowels, the removal of which from the system is not less necessary than the expulsion of the mere recrement of the food. And it is only when we succeed in exciting such a secretion, that our medicines effectually dislodge the contents of the colon.

A very common cause of the tumid abdomen in children is improper diet. There are many others; but this is the most frequent. The food may be too rich, or poor, and indigestible: or it may be taken too often, and in an improper quantity. In each of these cases the stomach suffers primarily. One link in the chain of morbid cause and effect being thus established, all the functions of the *primæ viæ* soon become more or less deranged.* Another cause, which often acts in conjunction with errors in diet, is confinement, and want of ventilation. In work-houses, and other establishments for young children, we may witness its effects. In fine,

* It is not to be understood that too much or improper food, in all cases, constipates the bowels. Sometimes it produces diarrhœa, though this happens most commonly in vigorous children. Where the stomach, and system in general, is weak, as in towns, morbid constipation is the ordinary effect.

whatever debilitates the system, weakens the tone of the stomach, and is thereby an indirect cause of constipation. So far as I have been able to form an opinion, the bowels never become morbidly sluggish till the stomach has betrayed some degree of imperfect action. This fact, if it be correct, is worthy of attention.

It is curious to observe how successfully some constitutions will resist almost every variety of morbific influence; but these are rarely met with. On the other hand, there are many children in whom it is nearly impossible, by the best management, and under the most desirable circumstances, to maintain the stomach and bowels in a healthy condition. Of course few only of the latter are reared: and ROUSSEAU assures us they are not worth the rearing.

Means of remedy.

Slight ephemeral deviations from health should be corrected by regimen alone. We are only to resort to physic when other means fail. If the bowels are torpid, the cause is to be investigated, and if possible removed or avoided. When this happens in the feeble and rickety the best management will be required, as well as the occasional use ofmedicine. By sedulously correcting the state of the stomach, the bowels will generally be found to expel their contents, and regain their

natural action. On the contrary, if we neglect the management of the stomach, we shall hardly succeed in keeping the bowels unloaded.

Food. The *colostrum*, or first milk of the mother, is a laxative. It clears the infant's bowels of the acrid *meconium*, which if long retained, would affect the health. This is a specimen of the natural combination of food and medicine, which we may often imitate with the happiest effect. If costiveness occur in an infant at the breast, it may, in a few cases, be necessary to wean it, though in general some kind of spoon-meat may be devised to obviate this symptom. Of course we are to discriminate between that dry state of the bowels which is natural to some children, (depending on peculiarity of constitution, the health remaining good) and morbid torpidity.* A little manna dissolved in the food, or a lavement of warm milk and water, will answer in almost every case if attention be given at the same time to general management.

* Where the costiveness is constitutional and does not affect the health, still we are to guard against its too long continuance, as in the end it may produce mischief. Dr. Dewees thinks that the bowels in this species of costiveness "may be bound from two days to ten, without the child receiving the least injury." I admit that such cases may occur, but we should hardly be justifiable in permitting the experiment under any circumstances.

Of the great utility and safety of mild lavements, I can speak with confidence. Every mother and nurse ought to acquire dexterity in administering this simple remedy, and no operation can be more easy. It is far too little employed in our nurseries. In the majority of instances it would save the use of laxative medicines, which, disguise them as we may, are always disgusting to the juvenile palate, and in many cases are constantly rejected by vomiting. No lavements are better than milk and water, whey, or thin mucilage, of a pleasant warmth. When any of these fails in sufficiently stimulating the bowels, one or two tea spoonfuls of common salt, or ten grains of powder of aloes, may be added to it: in such an addition, there is neither risk nor inconvenience. Indeed, whenever the bowels appear to be coated with slime, a stimulus of this kind is required.*

It is the first stage of morbid constipation to which I have been alluding; when as yet the

* Sometimes we find it necessary to vary our laxatives. A preparation of coarse flour is highly recommended, in these cases, by the judicious American writer Dr. Dewees. It is "a thin mush, made by boiling a small quantity at a time of the unbolted wheat flour in water, and straining it through a sieve while hot. It will be perceived that this must be made thin. A portion of this must be used in the milk the child takes, or it may be fed with it a little sweetened, two or three times a day, or oftener, or more seldom, as the case may require. We have never seen this fail, when properly attended to."

health is not materially deranged. Where it has existed for weeks, and the system is seriously disturbed, purgative medicines are indispensable. What I would insist on is, that the progress of the evil may be checked by mere domestic management. Let the motions of an infant be daily inspected: this is the imperative duty of every mother, and one to which she cannot attach more importance than it deserves. If they are scanty, or have an unnatural appearance, something is amiss which needs to be remedied, and nature is to not be trusted for the cure. Perhaps the deviation from the healthy state may be slight, and, by waiting, the bowels would soon act as usual; but this *may not*, and in the majority of instances *does not* happen without the use of means; and when a remedy of so mild a description as lavements or a little manna is sufficient, it cannot be wise to neglect it.

Medicines. It is doubtful whether treatises on domestic medicine are ever of use. Their most obvious effect is to create a fondness for administering physic, and a whimsical and often pernicious anxiety under trifling ailments. The readers of such books are generally the best friends of the apothecary, and the most troublesome patients to the physician. From the very nature of disease as it occurs in civilized life; the obscurity and complication of symptoms;

the rapid transition there often is from fancied safety to alarming danger; and the anxiety inseparable from domestic relationship; not to mention that the patient frequently takes upon him the *onus* of prescribing for himself; it is evident that this description of practical medicine is never likely to be cultivated with much satisfaction, nor with splendid success.

The preservation of health, which includes the management of ephemeral sickness, is, however, the business of every man, both as regards himself and his family: and so far as medicine avails in this respect, its properties cannot be too generally known. The contents of the nursery medicine chest should be few and well selected, consisting of little else than some of the milder kinds of laxatives, such as manna, magnesia, the leaves and confection of senna, castor oil, and the powders of jalap, rhubarb, and aloes.

When lavements, laxative diet, and beverages, fail in securing a regular state of the bowels, senna infused in hot syrup or molasses may be given in such doses daily as are necessary, it being recollected that the aim is not to *purge* but merely to *loosen* the bowels. This drug may be prepared in various ways, so as to be tolerably palatable. In whatever form it is given, it acts with more certainty and mildness than most

other medicines. Of all the purgative class it could perhaps be the worst spared out of the materia medica. The griping it is apt to produce is obviated by the addition of cassia-bark, or any other pleasant aromatic.

It may be proper to vary our laxatives; in which case castor oil may be given. By some it is thought to disorder the stomach. I have seen no effect of this kind. Next to senna, it would be the most valuable laxative for children were it somewhat more palatable. Jalap, too, is good; but it is sickly, and sometimes excites vomiting. It should always be given in the form of syrup. Aloes has of late been much recommended for children: my experience of its efficacy is limited; but I have no doubt, in a palatable form, it is a mild and most efficacious laxative.

I have not mentioned calomel, because it ought not to enter into the ordinary list of domestic medicines. In many cases, however, its use is indispensable: after laxatives have been freely given, and the motions continue offensive, a grain of calomel every other night is of singular advantage; or, instead of this, oxymuriate of quicksilver may be used. Two grains are to be dissolved in an ounce of alcohol, and from five to ten drops given night and morning in a little syrup. As an alterative in the visceral derange-

ments of children, either of these preparations is of high value.

When once it has been found needful to begin a course of laxatives, we must carefully persevere till the bowels are brought into order. This may be known in general by a reduction in the size of the abdomen: by the motions being of the natural appearance and quantity, and especially of the natural odour. When, for several days, the evacuations have been in these respects satisfactory, the laxative medicine may be omitted. It is necessary, however, that we should, in every case, be satisfied that all the secretions are in order; then, and not before, can we safely omit our medicines.

When the bowels have been unloaded, our duty is not ended; it is in fact only begun. Our aim must now be to invigorate the general health; by which alone the tendency to constipation can be obviated. This is to be effected by means, most of which have been described in the preceding sections; as change of air, when practicable; cold bathing; relaxation from school, when the child is so engaged; friction of the belly, and bandaging; the scrupulous regulation of the diet; and tonic medicines. Of these, change into the open pure air of the country or sea coast, if we except the regulation of the diet, is singly worth all the rest. Friction and bandaging of the ab-

domen are of very considerable utility, and in no case to be neglected. The former may be applied for a quarter of an hour night and morning, either with the dry hand, or better perhaps with a mild liniment, as that of soap, or simply olive oil. It certainly strengthens, in a surprising degree, the abdominal muscles, which, in these cases, are always feeble and relaxed. In this way it is manifestly useful. Besides, it acts directly on the bowels in a manner not easily explained, but which is shewn by the relief and comfort produced, the expulsion of the flatus, and the softening of the abdomen. After the friction, a cotton or flannel bandage should be applied, care being taken that it is not too tight; this aids the effects of the friction. It should, however, be laid aside as soon as the abdomen is of the natural size, else its use may become a habit not easily abandoned.

Were the foregoing simple directions generally attended to (and surely the most ordinary understanding is equal to their fulfilment) the diseases of youth might be lessened in frequency and severity; many lives saved, loathsome glandular affections, and various forms of decrepitude and lameness prevented, and the comfort, vivacity, and healthy developement of the body, in a high degree, promoted.

SECTION XI.

THE HEREDITARY TRANSMISSION OF PECULIARITIES OF STRUCTURE; AND THE EARLY MANAGEMENT OF SUCH AS ARE PREDISPOSED TO PARTICULAR DISEASES.

THERE is perhaps, no inquiry more interesting and extensive than that which relates to the causes of the physical varieties of man. It involves the question respecting the identity of the different races as one species, and furnishes a triumphant decision on the side of humanity and revelation. It also embraces the obscure and intricate history of their dispersion into the various regions they now inhabit. Our present concern is only with one branch of this inquiry, namely, the transmission of physical peculiarities, so far as they are the nature of disease, or predispose to it.

Every man may be said to be peculiar in the conformation of his body, that is, the form of the features of his face, the form of his hand, of his foot, and of the other members, differs from that of the same parts in every other individual:

and by analogy we infer, that with respect to internal structure there is an equal difference. This may be named *individual peculiarity*—that by which any one of our species is distinguishable from all the rest.

Again, there is *peculiarity of race*, by which it is said we may distinguish mankind into five grand varieties, namely, the Caucasian, the Mongolian, the Ethiopian, the American, and the Malay.*

There is also *national peculiarity*, which splits each of these grand varieties into smaller families —a certain similarity of figure and of countenance—by which we may generally distinguish, for example, natives of England, Ireland, and France, from each other.

More circumscribed varieties still, are discernible, whose peculiarities distinguish the small tribes of the same nation confined, by local or moral causes, to certain districts. This is

* Dr. Pritchard, in his work on the physical history of mankind, objects to this division, which is that of Professor Blumenbach, founded on peculiarities in the form of the skull. The former proposes to divide the varieties of the skull into three classes, distinguishing them "by names descriptive of their forms, and not derived from a supposed origin of the nations to which they respectively belong." The late and greatly enlarged edition of Dr. P's work (it may in fact be called a new work) must rank that author among the most eminent philosophers of his age. It is indeed a model of patient and astonishing research, as well as of perspicuous, comprehensive, and satisfactory reasoning.

amply illustrated in the nations on the African continent.

Lastly we have *family peculiarity*—the resemblance which children of the same family bear to their parents, to each other, and to relations of even many removes of consanguinity.

Family peculiarity manifests itself in many traits: as the gait, the gesture, the look, the voice, the form of the whole and of particular parts of the body; the colour of the eyes, hair, and skin; in strength, stature, health, diseases, longevity; and not less in temper, disposition, talents, virtues, and vices. The late Dr. Gregory, in allusion to this subject, used in his lectures to relate the following anecdote. He chanced to be called to a great distance in the north, to visit an aged lady of rank, residing in an old Baronial Castle. On entering the hall, and examining the family pictures, he was struck with one which represented a former Lord of the place, who had been Chancellor of Scotland in the reign of Charles I. It shewed a remarkably prominent aquiline nose, and a singular set of features, all of which he found were strikingly observable in the lady of the house, a lineal descendant of the Chancellor. Going afterwards to houses in the neighbouring hamlet, he remarked the same cast of features in several

families. On inquiry, the steward of the lady informed him that the old Chancellor had been the father of several illegitimate children, who had thus widely disseminated the visage of their common progenitor.

I shall not attempt to illustrate by examples all the varieties of hereditary peculiarity, though the subject is certainly one of much interest. Many families have been noted for having six fingers on each hand and six toes on each foot. A disproportionate size of a particular feature is also sometimes observable: "I knew a Spanish nobleman," says PORTAL, "who had one cheek larger than the other. He told me that his father and his uncles had a similar deformity."* The Porcupine family, whose history appears in various numbers of the Philosophical Transactions, is an instance of the transmission of a singular monstrosity through several generations. Short necks are distinctive of some families; so are narrow chests; prominent shoulders; protuberant bellies; indeed every variety of form and colour, however trifling, manifests a disposition to become permanent in the race.

* See a translation of M. PORTAL's paper, "sur la nature et traitment de quelques maladies hereditaires" &c.—in the 21 and 22 vols. of the Medical and Physical Journal.

It has been already remarked, that talents, virtues, and vices, and we may add idiosyncrasies, are as much hereditary as other traits. The MELVILLES, it is said, inherit their talents from a Miss SINCLAIR, who married into their house.* Previously to that happy union, we are to presume the family was noted for dulness. Many an aristocratic race in our own country is characterized by hereditary generosity and courage; while others have been known for meanness and pusillanimity in all their generations. Hereditary disposition to drunkenness is frequent, though I do not remember to have seen it remarked; it can furnish no apology, however, where it exists, for indulgence in that odious vice.

Defective conformation of parts appears to be less uniformly transmitted, than peculiarity of structure, and supernumerary parts. The club foot, connate deafness and blindness, do not always, nor very often become hereditary.†

* Code of Health and Longevity, by SIR JOHN SINCLAIR. Vol. I.

† "The Gentleman who superintends the manufactories" in the London Asylum for Deaf and Dumb "and who consequently has the best opportunity of tracing the subsequent history of his scholars, informs me that some of them are married, and have children all of whom are perfect in the organ of hearing. One instance has occurred in which both parents were born deaf, yet their children hear." ADAMS, on hereditary diseases, Page 67. There are facts which prove that in cases similar to the above the results have been different.

While, on the one hand, all connate peculiarities of structure, that is, "such as are impressed on an individual from his birth, or rather from the commencement of his organization, are apt to re-appear in his offspring; on the other hand, changes produced by external causes in the appearance or constitution of the individual, are temporary: and, in general, acquired characters are transient; they terminate with the individual, and have no influence on the progeny."* Thus, for example, the constitution loses its liability to small pox by passing through that disease; but this acquired exemption is never transmitted: on the same principle the loss of a limb, or of any other member, does not entail a similar mutilation on posterity.

It is important to observe that hereditary peculiarities may become suspended in one generation, and re-appear in the next. A man may resemble his grandfather or great grandfather more than his father, and not in appearance and temperament only, but also in diseases.

Children may resemble in feature and constitution both parents; but the resemblance is most frequently to the father. Thus the offspring of a black father and white mother is much darker than that of a white father and black mother. In improving the breed of cattle it is well known

* PRITCHARD, Vol. ii. Page 536.

that most depends on the qualities of the male. Yet *varieties* spring more generally from the mother, and the sex of the issue, there is reason to think, is determined also by her.

Of the transmission of internal varieties of structure there can be no doubt. Hereditary malformations of the brain are sometimes met with, and those of the heart are frequent. The same may be inferred of other organs, whose structural peculiarities are not readily detected: as the stomach, bowels, kidneys, bladder, lungs, and womb; diseases affecting them being often manifestly inherited in the way of predisposition. HIPPOCRATES asserts that all children inherit more or less the temperament of their fathers, and that every disease is in predisposition hereditary. There is undoubtedly much truth in this opinion. In many diseaes, as gout, scrofula, insanity, epilepsy, asthma, dyspepsia, consumption, we can directly trace the disposition to an hereditary source; and the disposition to inflammatory diseases and fevers is common to the members of a family in successive generations.*

*In many families we see a predisposition, common to several or all its members, to be severely affected by one or other of the infectious diseases of infancy. Thus the children of one family suffer severely from chincough, while those of another family have this complaint mildly; but encounter great danger or die from measles. The natural small pox is unquestionably modified by this cause; and the same is to be observed in inoculating for the cow pox.

By an *hereditary* disease, we ought, strictly speaking, to understand a disease which is found affecting the infant at birth, and which also affected one or both the parents at the period of conception. Such a case, however, is rare, unless we are to class defective organization under this head; as when the deaf, blind, or idiotic give birth to children of their own type. There is, indeed, a form of scrofula affecting the mesenteric glands, accompanied with tuberculous disease of the viscera in general, discovered in dissecting still born infants, to which the term may be applicable: but even in these cases we cannot decide whether the disease was coeval with the commencement of organization or called into action at a later period of gestation. On so obscure a subject conjecture is our only resource.

Hereditary predisposition to a disease is more easily defined. It is generally confounded with the former; but is in fact *no disease* any more than the disposition to steal is theft. It consists in a certain conformation of the whole body, or of certain organs only, tending, under the influence of exciting causes, to produce a particular disease. Each kind of predisposition depends upon a distinct and peculiar organization and requires the operation of an appropriate cause to

bring it into activity. Thus, there is one kind of predisposition to gout, another to scrofula, and a third to asthma. Again, the exciting causes of asthma or of scrofula differ from those of gout. It is true also that the same cause may produce gout in one, epilepsy in a second, and apoplexy in a third.

Hereditary predisposition to one or more diseases is extremely common. Most people have a defective part in the system, ready, like the weakest link in a chain, to give way when severely tried. A parent, for example, has tender and irritable bowels; some or all of his children inherit the same. In this way dispeptic and hysterical complaints, as well as the whole train of nervous disorders, are transmitted from parents to their offspring.

The strength of predisposition to a particular disease varies greatly in different people; the predisposition to scrofula or insanity for instance, is called into activity in some, by slight causes, while in others extremely powerful causes only will produce such an effect.

Again, different kinds of predisposition differ naturally in the degrees of their intensity: the predisposition to gout is generally so strong as to end in the disease, unless the exciting causes are carefully avoided; and occasionally this effect

happens in spite of every precaution. Hence, few of the male children of a gouty parent escape the complaint. Whereas the predisposition to scrofula may in the majority of instances be restrained.

It is to be held as a general rule, that an individual, aware of the nature of his *predisposition*, may ward off the disease by avoiding the exciting cause. This is an important consideration. It holds out a strong inducement to acquire and maintain habits the best calculated to fortify the constitution against the threatened evil. It is also consoling to such as seek to improve their race; as, by attention to health, they may not only lessen the predisposition in their own persons, but extend the benefit to their offspring.*

Some writers are of opinion that all who are conscious of being *predisposed* to such diseases

* Dr. Pritchard remarks that, "whatever changes of organization are superinduced by external circumstances, and are foreign to the character of structure impressed upon the original stamina, cease with the individual, and have no influence on the race." This is true, in a limited sense; but it is also probable that such "external circumstances" as habits of living, may determine new varieties in a race. Might not hard labour and meager diet, in a gouty family for example, so modify the offspring in the course of several generaions, as to substitute for the gouty diathesis, one of an opposite kind, as the scrofulous? In this way, acquired states of the constitution may have an influence on the race: if we deny this, we may, I conceive, on the same ground, deny the influence of climate in the production of new varieties of physical conformation—a conclusion which would be opposed to the most obvious facts.

as insanity, and scrofula, ought to avoid marriage. In Scotland there was anciently a law to this effect.* And the Greeks are said to have destroyed at birth the feeble and diseased, lest they should live to propagate a race of weak and degenerate citizens. It is hard to say whether the latter practice was more absurd or barbarous. Many of the greatest and wisest men in every country have been feeble in infancy: and their own ÆSOP was an evidence that genius and wisdom are sometimes united with decrepitude. Under the circumstances which have been mentioned, the question respecting the lawfulness of marriage must be left to the moral sense of individuals. With the consciousness of possessing a strong predisposition to insanity, the sensible part of mankind, we may charitably suppose, would choose to remain single: but, excepting this malady, which is unspeakably more horrible than any other, and to which the predisposition is generally strong, there is no disease that should be accounted a moral barrier in the way of marriage. In extreme cases of scrofula, asthma, and epilepsy, the prudence of a union of this kind, might be more than questionable; but a restrictive law to operate in such instances would be both cruel and partial, as it

* See ADAMS on Hereditary Diseases, page 46.

could only restrain the good; the bad would be sure to evade it.

The more we reflect on the Mosaic law which prohibits marriage within certain degrees of consanguinity, the more clearly do we perceive its practical wisdom. In many cases intermarriages of relations would produce the most loathsome results. PORTAL mentions a town in the department of Paris which abounded with revolting diseases and deformities of an hereditary kind. The evil originated in two or three bad marriages. The children of these connections intermarried, and the diseases were successively multiplied. This account would have furnished a proper theme for the pen of a MATURIN. An eccentric imagination might delight to people a number of uninhabited islands, each with a race predisposed to a different disease, and to pourtray the appalling effects, increasing, as they naturally would, in every successive generation. The mind revolts at the least approach towards contemplating such groups of all that is most hideous in human nature; and the mere allusion to imaginary arrangements of this kind would hardly be justifiable, were it not fraught with a lesson which "he that runs may read."

There is a modification of hereditary predisposition, which DR. ADAMS has called "*Family*

disposition" to disease, on account of its being "confined to a single generation, to brothers and sisters, the children of the same parents."* It may be thus exemplified: one child of a family at a certain age becomes affected with water in the brain, and dies; each, or several, of the remaining children take the disease as they arrive successively at, or about, the same age. This *disposition* in families, during childhood, to a particular disease (frequently *hydrocephalus)* is extremely common and consequently a subject of deep interest. Occasionally the disease makes its appearance without any apparent exciting cause; or it insidiously follows in the rear of some other complaint, as chincough, or measles. Though several of the family may have fallen victims, the rest may escape: there is hope of this, when the latter have passed the age at

* Certain of DR. ADAMS's definitions appear to me rather puzzling than correct or useful, as, for instance, his distinction between Family disposition and Hereditary predisposition. In some families, he observes, "we see a number of brothers and sisters falling into consumption in succession, as they arrive at a certain age. This we may strictly call a Family disposition to the disease, inasmuch as it is confined to a single generation, and we can discover no external cause to excite it. Another kind of consumption, and the most common in cold climates, is hereditary; but only in predisposition, always requiring the influence of climate to induce it, and consequently always to be relieved, and often prevented by avoiding the exciting cause."—Page 16. The impossibility of maintaining this difference between the two species of consumption, on the ground here assumed, is too obvious to require comment.

which the others were affected. Children of a family who inherit a *disposition* to the same disease, generally resemble each other, both in external appearance and mental character. This is often noticed by parents. When a second child is attacked, they will remark how like he is to his brother or sister that died. The *disposition* is sometimes to blindness or deafness, instead of a constitutional disease. This variety is illustrated by the following history. "All the Le Comptes saw clearly till about the age of 16 or 18: at that age, some of them, without any apparent cause, became dim sighted, and grew gradually more so, till they became dark: such has been the case, for three generations, with a certain number in each race; meanwhile such as have escaped that critical age, have retained their sight through life."*

* Baltimore Medical and Physical Register for 1809, quoted by Dr. Adams.—page 19.

The liability to diseases to which there is a strong disposition, to occur at certain critical periods of life, is worthy of attention. Insanity, for example, is extremely apt to shew itself at puberty, during pregnancy, and in the puerperal state. Hysteria, at puberty; hypochondriasis, about the cessation of the catamenia; dyspepsia, on arriving at adult age; consumption, between the ages of 25 and 35 years; angina pectoris, about the age of 50, &c. These critical periods, however, differ in different families. Thus, all the members of a family shall become consumptive about the same age, which may be several years under 25.

The duties of a family, aware of their own critical periods,

The origin of hereditary predisposition to disease is a subject of singular obscurity. Yet we cannot doubt (to use the words of Dr. PRITCHARD when speaking of the origin of varieties of form and colour) "that every phœnomenon of [this kind] has its determinate cause, and that each peculiar circumstance in the result is determined by a corresponding modification in the antecedents." I can do little more now than remark that climate would seem to be a powerful agent in the production of new varieties of conformation which dispose to disease, aided of course by modes of life and a great variety of moral circumstances. Thus the inhabitants of warm climates are nearly exempt from scrofula; but on removing to the temperate latitudes, they propagate a highly scrofulous race. On the other hand, the Elephantiasis, an hereditary disease, is peculiar to warm climates. In various districts of our own country, we find certain diseases hereditary, which we are not warranted in attributing solely to intermarriages into diseased families. In the cold and moist climate of the West of Scotland for example, various forms of scrofula are extremely prevalent. Goitre and idiotism are also found in many

in regard to the management of the health, must be obvious; though, perhaps, in their case, the stoicism of the poet is not inapplicable.—

"Where ignorance is bliss, 'tis folly to be wise."

places which are similarly characterized by a cold and humid atmosphere. In our own neighbourhood near Oldham there is a district singularly prolific in idiots.*

Of the other causes which may produce new varieties of structure disposing to disease, I shall mention only premature marriages. It is well known that when cattle breed too early their young are so deteriorated as not to be worth rearing: by analogy we infer that the same deterioration will happen in the human race under similar circumstances; and there are facts which render this inference probable. In large towns, and in crowded manufacturing districts generally, marriage, and the vicious union of the sexes, at a premature age, are extremely common. When to this, we add unwholesome and scanty food, confinement to labour from an early age, and unhealthy employments, we cannot hesitate to conclude that the progeny of such parents will be of a more delicate organization than that of grown people, whose physical powers have been fully and naturally developed.

In the recent work of M. DUPIN, entitled "Productive and commercial Forces of France"

* See an interesting paper in the Memoirs of the Literary & Philosophical Society of Manchester 1824, by MR. K. WOOD, entitled "Some Observations on the local prevalence of Idiotism, and its connection with Goitre."

some curious facts are given, which bear upon this subject. According to returns presented to the Chambers in 1826 by the minister of war, it seems that out of 1,033,422 youths who appeared before the councils of Revision, there were 380,213 rejected because they did not even reach the stature of five feet one inch and four fifths English. This remarkable diminution in the size of his countrymen M. DUPIN attributes to the wars of the revolution having drained off the virile part of the inhabitants; the consequent union which took place of old men with young women; the premature marriages on the part of the male sex with a view of avoiding the army; the inferior food of the working classes; the encouragement held out to licentiousness by the liberal endowment of Foundling Hospitals; and various other causes. If circumstances of this description are adequate to produce modifications of stature (and it can hardly be doubted) they of course may give rise to new varieties of hereditary predisposition to disease.

With regard to an hereditary *predisposition* in any individual case, it would be unwise to attempt to determine the *time* and *manner* of its origin. There are unquestionably degrees of predisposition so slight as never to become manifest but under the influence of powerful exciting causes,

and on that account may exist in a latent state for many successive generations. This fact should teach the most healthy not to trifle with their constitutions, lest, in their fancied exemption from hereditary bias, they come to repent, when too late, having exposed themselves to causes, which had they avoided, the secret of the particular *predisposition* would not have been revealed. Unhappily prudence does not always ensure safety. A family in which no instance of scrofulous affection has previously appeared, is visited with small pox, and after the small pox, with scrofula in several or all of its members. The same will sometimes happen when there is a change from circumstances of comfort to abject poverty and its attendants, cold, filthiness, unwholesome diet, and the depressing passions. The conclusion, therefore, is, that in order to secure a reasonable chance of exemption from hereditary diseases we must avoid their exciting causes. This is our duty, when we are aware of our particular predisposition; and it is our duty, when we do not know it; for no man can say of himself or his family that they are free from hereditary bias to disease.

Whether diseases, inherited in the way of predisposition, increase with the progress of civilization and refinement, is a question of much interest,

and one which I imagine must be answered in the affirmative. In a rude state of society, where moral causes have little effect on the health, the diseases are principally of a contagious and epidemic nature. With civilization these decrease, and diseases of habit increase in a rapid ratio.

An interesting subject remains for consideration—the early management of such as are known or suspected to inherit a disposition to particular diseases. In discussing this topic, I shall confine myself chiefly to the scrofulous predisposition, because it is the most common, and the most important of any, from the variety of its consequences, as well as from its manifesting itself in childhood, and being more than any other, under the control of judicious means.

When parents have symptoms of scrofula, or have reason to believe they inherit a tendency to the disease, they ought to consider their children as partakers of the same predisposition. This conclusion may be erroneous, as it occasionally happens that some of the children of a family are, at least apparently, exempt from the physical peculiarities of their parents: it is the only conclusion, however, which is safe and wise, as it furnishes a powerful motive for unremitting attention to their health. In the degree of care bestowed upon individual children, parents should be guid-

ed by the more decided appearance in some than in others, of the strumous diathesis. This, in different subjects, is not always indicated by the same appearances. The following are the most worthy of reliance. A fair, soft, fine skin; slender muscles, very indistinctly marked; this indistinctness owing in part to the unusual quantity of loose cellular substance with which they are every where covered. The lips are large; the cheeks of a fine red, or a dingy ash colour; the eye lashes long, or the edges of the lids red, naked and gummy; the eyes unusually light and brilliant; the conjunctiva pearly white; the hair of a pale yellow, or jet black; the spirits lively, the temper quick, open, and generous; and the mind rather precocious. The body is generally slim; the chest narrow, often what is called chicken-breasted; the digestion weak; the abdomen prominent; the spine and long bones frequently manifesting a disposition to rickets; and the ligaments of the joints in general, but particularly those of the spine, knee, and ankle, evincing a tendency to relaxation. These characteristics of the strumous diathesis are not to be implicitly depended on. The disease may occur, where there are few of these indications. There is one more, which I consider worthy of particular notice: it is a defined patch of deep

red in the cheek, generally observable in those that have dark hair.*

The system of management in every scrofulous family should embrace attention to diet, dress, cleanliness, and bathing, the regulation of the stomach and bowels, and, where it is practicable, to climate and local situation.

Children exhibiting symptoms of the strumous diathesis require a more stimulating diet than others. Whether scrofula is simply a disease of debility or not, it is unnecessary at present to inquire. It is certainly, in general, connected with great feebleness of all the functions directly dependant on the circulation of the blood.—"With respect to the state of the body in srofulous children," says Sir A. Cooper, "the blood is less firm, the crassamentum loosely formed, and coagulating weakly; the quantity of serum abundant; and the solids are feebly formed.

* It is the duty of a parent to become acquainted, not only with the appearances that indicate a tendency to such important diseases as scrofula and insanity, but also with the character of the constitution of each of his children, when exposed to morbific causes. It may, for instance, be of considerable importance, to be aware that taking cold will affect one with deafness, another with quinsy, a third with bronchitis, a fourth with ophthalmia, and a fifth with diarrhœa;—effects which depend principally on the weakest point in the system being differently situated in each. The breeders of live stock possess a knowledge of this kind, with reference to their charge, which might be profitably imitated in the rearing of children.

When you dissect a scrofulous person, you find extreme attenuation of the muscles, owing to the fibres being delicately formed, the cellular tissue thin, the heart weak, not at all having the appearance of the healthy organ; you find the arteries with loose coats, and, if you were to inject them, that the injection would scarcely reach the extremities; nor is this surprising, since it happens that the vessels often expand and give way, and also that there is blood at the extremities of the arteries which, owing to their great weakness, they have not had the power of propelling into the veins as they usually do. The stomach and intestinal canal are thin and pellucid; the absorbent glands are enlarged; the secretory glands are flaccid, but not diseased; and the nervous system sometimes exhibits marks of irritation having existed in it."* These remarks, though not applicable to all persons of a strumous taint, are of value, as indicating how the health may best be preserved and strengthened. The stomach is weak, it therefore requires a stimulus in order to perform its functions; the blood is serous, consequently it needs to be made richer, that it may furnish materials for improving the textures of the body. Food and drink of a generous kind, yet easy of digestion,

* Sir A. Cooper's Lectures,—Lancet vol. ii. p. 411.

are necessary. Free exercise, avoiding fatigue; cold bathing, followed by friction, particularly of the joints of the limbs; a pure dry air; clothing well adapted to defend the body without loading it, and regular attention to the alvine excretions —are also highly beneficial.

Because vegetables and milk are useful in a few instances of the scrofulous diathesis, some have recommended them as the best diet in all. But such views are partial and unsound. In by far the majority of cases vegetable diet is directly contra-indicated. It is only likely to answer when the diathesis in question is connected with a robust constitution, a circumstance which is not common.

In general, animal food should be given at breakfast, and again at dinner; and the beverage, at the latter meal, should be wine and water, or brisk beer. The tendency to the disease is always greatest in spring and autumn, owing probably to the combined operation of cold and moisture, which are the bane of the scrofulous. At these seasons, the diet, and all the other means of prevention require peculiar attention.

Sea bathing is an old remedy, and still in much repute. When adopted with judgment, it is the most powerful means we possess for counteracting the predisposition in question. Children

in these circumstances should be sent to the coast as early in the spring as the weather will allow, but they are never to be sent in unsettled weather. It is an error to imagine that sea air is beneficial, in such cases, at all seasons. On the contrary, in cold rainy weather the sea coast is more unfavourable than any other situation, as the prevalence of scrofula in many sea port towns fully proves. In fine weather, however, the air and bathing together, improve the health with a rapidity which no other means can effect. It has often occurred to me, on witnessing the number of patients under adult age who crowd for relief to the medical charities of this town, that were the different townships to unite in establishing accommodation at the nearest watering place on the sea coast, for such objects only, as the medical officers of these charities should recommend to be sent, the townships, the public charities, and the patients would be equally relieved. In many instances, the latter would receive more benefit in a few weeks from such a change of air and scene, than they possibly could from a long course of the best directed medical assistance whilst resident in their own unhealthy abodes.

In children labouring under the scrofulous diathesis, and indeed in the case of all that are by nature feeble, the regulation of the bowels is

of great consequence, but of extreme difficulty. Unless this circumstance be watched with incessant care, feculent accumulation is sure to take place, which is soon followed by alternations of diarrhœa and costiveness, and all the other *sequelæ* of chronic derangement of the first passages, aggravated, as may be supposed, by original debility and imperfection of constitution. In these cases, tumidity of the abdomen is invariably present, and is one of the readiest indexes of the state of the bowels. The means recommended in the last section are required, and it is here that small doses of a mercurial alterative are more indicated than under any other circumstances.

Local situation is of great importance to the scrofulous. When they can choose their residence, it should be on a dry chalk or gravel soil, always remembering that their greatest enemy is a climate characterized by cold and moisture. It follows of course that exposure to inclement weather, or to the night air, residence in low situations, or in a large town, particularly near a river, confinement at in-door employments, especially in heated and crowded manufactories; are all unfavourable in this species of *predisposition.*

Lastly, in order to secure correct habits, the strictest moral discipline should be maintained: without this, which extends its influence to

adult life, attention to the preceding directions would only resemble the folly of an architect who should direct all his care to a foundation, regardless whether the superstructure should be of stone, wood, or stubble.

When the predisposition is to insanity, the duties of a parent are of the most arduous and responsible kind, requiring no less firmness than judgment. But much may be done. Habits of attention to health and morals should be early formed, so as to secure a sober and manly bias to the character. The intellectual discipline too, is of high importance, it should be directed to strengthen the understanding, while it chastens and curbs the fancy. All works of imagination, and even the fine arts, are to be avoided till both mind and body have attained maturity. The severe features of real life, and the details of ordinary duties, are distasteful to one that would revel in an ideal world. But they should be made familiar to him, and as far as possible, agreeable, that in time they may become associated in his mind with health, happiness, and, above all, with a sense of duty.

The judicious early religious instruction of this class of children, cannot be too strongly urged: and I would extend the observation to all that are predisposed to diseases of the nervous

system. Their naturally extreme sensibility, while it renders the hopes and consolations of a sound faith essential to their ordinary happiness, disposes them, when uninstructed, to adopt fanciful and unscriptural views, which either destroy their own peace, or, when joined to an ardent, ambitious temper, originate the most lamentable fanaticism, or mischievous imposture. It is an invaluable remark of a foreign writer, that "the more feeble the body is, the greater influence it has on the mind; and the stronger it is, the more obedient it is to its [the mind's] commands." Here, on the one hand we have a powerful motive for invigorating the body, that it may readily *obey*. And on the other hand for regulating and fortifying the mind that, instead of being the slave of morbid fancies and feelings, it may possess efficient power to *command*.

"Train up a child in the way he should go; and when he is old, he will not depart from it," is a general admonition of Divine Wisdom. The parent who is conscious of having transmitted to his children a *predisposition* to diseases which may be a stain on successive generations, and the cause of gloomy misery, or of appalling crimes; and who disregards this admonition—who neglects any thing which prudence, example, system, enforced by authority can do to avert such con-

sequences; is guilty of a crime against his species, the enormity of which it would not be easy to parallel.

Where the gouty predisposition exists, (the disease seldom or never appears under manhood,) such habits of living should be enjoined, and such employments chosen as are well known to oppose the gouty diathesis. A parent, in such a case, would of course warn his son against the pursuit of civic honours: above all he should be laid under an injunction to *walk* through life. To understand the use of this habit, the reader cannot do better than peruse FRANKLIN'S amusing dialogue with the gout.

From what has been already remarked the management under other kinds of predisposition may be inferred. A person predisposed to asthma should not be apprenticed to a lapidary, nor one having a tendency to epilepsy exposed to the temptation to inebriety: where the predisposition is to hysteria a sedentary life should be avoided, and above all the predisposed to dyspepsy should never spend his days in a large town.

At a proper age children should be informed of the reasons why they are subjected to a particular line of management, that the responsibility of maintaining it may gradually devolve upon themselves. I can see no objection to this course.

It will tend to strengthen the desired habits, till they become, what it is essential they should become, if I may use a legal phrase, "part and parcel" of the nature of the individual.

INDEX.

PART FIRST.

PART SECOND.

different organs. Note, the age of a child, how ascertained. Note, Weight of the brain 95. Infancy the age of vivid sensations; state of the mouth 96. Stomach and bowels; liver 97. The functions of the latter in the fœtus, kidneys &c Symptoms which precede teething 98. Teething, order in which the teeth cut the gums 99. Milk teeth. Note, deviations from the order in which the teeth usually appear 100. Definition of the terms infant and child 101. Diseases of childhood less fatal than those of infancy. Note, mortality occurring in Cheetham's Blue Coat Hospital; Blue Coat School, Warrington; and in Ackworth School 102. Infantile temperament 103.

Section II....On the duties and qualifications of a wet nurse.—She who determines not to suckle ought not to become a mother 105. Circumstances which disqualify for suckling 106. Substitutes. Note, advantages of suckling 107. Suckling by means of brute animals—hired wet nurse 108. Wet nurses, their faults and failings 109. Character of a wet nurse, in prose 110. In verse 111. Mortality of the children of wet nurses 112. Means for preventing it 113. Qualities of the milk of a wet nurse; sickness incapacitates for suckling 114. Complaints which disqualify. Note, influence of nervous affections on the milk 115. At what period the infant is to be put to the breast. Note, State of the milk in phthisical patients 116. Milk fever and excoriation of the nipple 117. Infants suckled too often; a nurse should live by rule,—her food &c. 118. Effects of spirituous liquors upon a wet nurse 119. Effects of passion on the milk 120. Inebriety in nurses a cause of infantile mortality 122.

Section III....Articles of aliment suitable for the early periods of life.—The milk of every animal is distinguished by certain properties 123. Table shewing the richness of different kinds of milk 124. Milk of the cow, ewe, mare, ass, woman 125. Peculiar property of woman's milk 126. Boiling of milk injures its qualities 127 Whey, butter, and cheese 128. Sugar, Note, experiments

of Magendie 129. Effects of sugar on the teeth; molasses 130. Different farenacea, esculent vegetables 131. Potatoes, fruit 132. Animal food 133. Methods of cooking it 134. Infusion of animal food, oyster tea; pickles and spices 135. Beverages, tea and coffee 136.

Section IV....On the dieting of children, in health and sickness.—The two maternal breasts secrete only one kind of nutriment; inference 137. Connexion between the dieting of children and many of their diseases 138. Division of the subject 139- Weaning, artificial food 140. Kinds of artificial food 141. Dry nursing. Note, mortality of dry-nursed children 142. Bottle and teat, asses' milk 143, Over feeding in sickness 144. Ignorant nursery servants 146. Diet and regimen in sickness 147. The same 148. Age for weaning; season of the year 149. Diet after weaning 150. Gluttony, its effects 151. Animal food, in what period to be commenced 152. Its effects 153. False reasoning on the effects of diet 154. Comparative management in infancy and childhood; animal food during the latter period 155. Effects of a diet of vegetables; oatmeal 156. Its effects in producing the itch; a child's breakfast 157. Dinner. Note, the best sauce 158. Eating too quickly. Note, over distension of the stomach 159. Gorging—beverage for children 160. Antipathies and idiosyncrasies 161. Different children require different food 162. Boys, their food at puberty; girls, their habits 163. Peculiar diet requisite. Note, starvation 164. Beer 165. Management at puberty 166.

Section V....Of cleanliness, bathing and the management of the skin.—Effects of filthiness; skin, its structure 167, & functions 168. Danger from accidents affecting the skin &c. 169. Definition of filthiness; first ablution 170. Washing the infant 171. Calls of nature; bathing 172. Cold bath 173. Tepid and hot baths 174. Note, shower and nursery bath 175. Salt water bath 176. Rules to be observed in bathing 177. Friction,

THE END.

PRINTED BY JOHN HARRISON, WARRINGTON.

The reader is requested to correct with the pen the following errata.

			Page.	Line.
For "2785" read 1785 (8th line from the bottom)			16	—
Opposite "Lymm," for "45.90" read 45.91			28	—
For "died any time," read died at any time			55	15
For "334 or 46.22" read 234 or 42.86			57	17
For "8827 read 8527			73	14
For "bedded"	—	imbedded	91	27
For "energy"	—	excitability	96	5
For "morbid"	—	morbific	154	6
For "into"	—	of	288	22