An essay on the nature of scrofula : with evidence of its origin from disorder of the digestive organs. / by Richard Carmichael.

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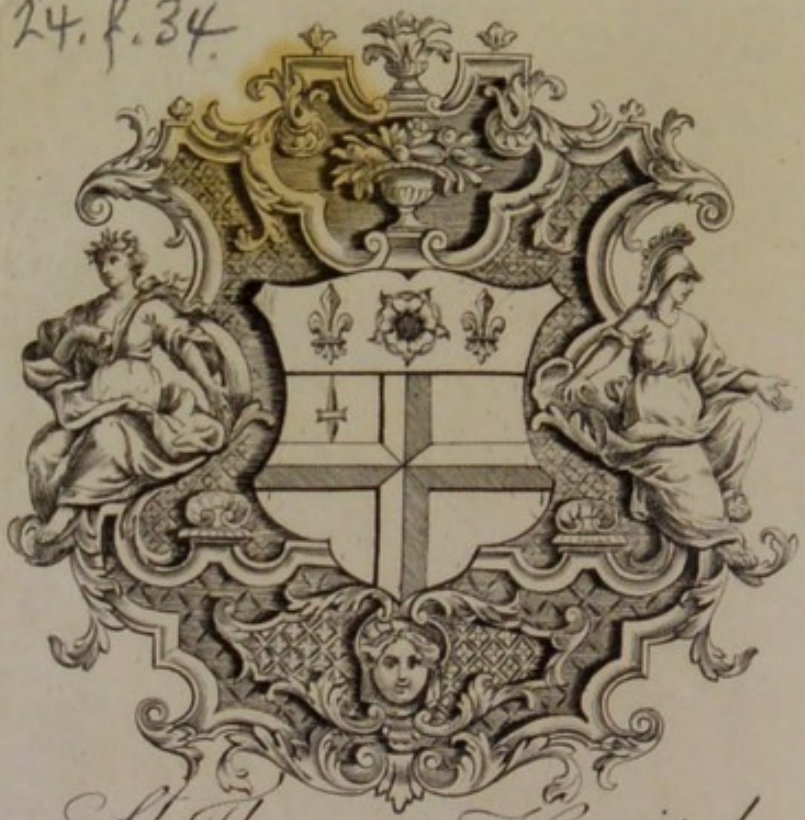

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DISORDER OF THE DIGESTIVE ORGANS.

ILLUSTRATED BY A NUMBER OF CASES SUCCESSFULLY TREATED, AND INTERSPERSED WITH OBSERVATIONS ON THE GENERAL TREATMENT OF CHILDREN.

By RICHARD CARMICHAEL, Surgeon.

LONDON:
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TO

JOHN ABERNETHY, Esq. F. R. S.

&c. &c. &c.

Sir,

In composing the following Treatise, I felt no common pleasure in the prospect of inscribing it to a man capable of rating it according to its value, whether that should happen to be much or little; and I anticipated in no small degree, the pride of making some little progress in *his* estimation, who stands so high in mine, and in the world's. But this pride and pleasure have been more diminished than perhaps they ought, by the perusal of your invaluable "Observations on the constitutional Origin and Treatment of local Diseases," in

which you have preceded me in the most important part of my subject, and of which I presumed myself the sole author, until the very eve of publication. But if I shall be a loser in the character I hoped to attain, the public is essentially a gainer, and must rest with double confidence on the facts which were observed, and the conclusions adopted, at the same time, by two minds, without any communication, and at a distance from each other.

Had your work been sooner published in this country, though it does not altogether preclude the necessity for *mine*, it is probable I should never have taken the trouble of writing it, as the great stimulus of reputation would have been wanting to my exertions. But, certainly, I should not have entered so minutely into detail, with your name to support me, as was necessary, when I supposed I stood singly, against prejudices, so long and so universally entertained, on the subject under consideration.

Not having so wide a field as yours to expatiate in, and confining my observations

to a single disease, I was naturally led into a deeper pursuit of one cause after another; and having satisfied myself that Scrofula arose from a disordered state of the digestive organs, I continued the enquiry, until I found that this state was occasioned by want of exercise, and a variety of other causes which I have examined at large; and that the indigestion which was the consequence, in its immediate effects, allowed the aliment to run into the acetous fermentation. Having established these points, I was not deterred from investigating the mode by which the acid thus produced gives birth to the phenomena of the disease, though this necessarily rested upon conjectures more than positive demonstration.

Every cause, as it was ascertained, suggested its appropriate remedy; and explained why, and in what manner, some medicines in use were really beneficial.

If, after all, these disquisitions should in your opinion possess any worth or novelty, so far from regretting that you anticipated me in the most important matter they con-

tain, I shall rather feel a pride in recollecting, that at the moment I ascertained that prominent circumstance, its truth was already established and confirmed by a mind so much superior to my own.

I have the honour to be,

Sir,

With increasing respect, and
unalterable esteem,

Your very humble servant,

RICHARD CARMICHAEL.

Dublin, February 6, 1810.

CHAPTER I.

CONSIDERATION OF THE REMOTE AND PROXIMATE CAUSES OF SCROFULA.

THE state of the digestive organs seems to have been hitherto strangely overlooked, in the treatment of scrofula—a circumstance which can only be attributed to the influence of the popular opinion, that the disease is owing to a peculiar acrimony, or virus, transmitted from parent to child, from one generation to another; and therefore that attentions to the state of the organs of digestion would be superfluous in a disease which could only be combated by such means as would be capable of subverting its supposed origin, or in other words, by those remedies which from the unknown mode of their operation have been denominated *Specifics*. But I trust I shall make it appear evident, that disorder of the digestive organs precedes and accompanies the symptoms of the disease; and that many of its phenomena immediately, and in the most obvious manner, arise from this source alone.

It may seem strange that in this age, so remarkable for investigation in every branch of science, the

symptoms I allude to have not been assigned to their proper cause; and it can only be accounted for in that too ready acquiescence, with which we adopt opinions that have been long stamped with credit, however undeserved, and the consequent inattention with which we treat not only such statements as contradict them, but even the very facts that come under the cognizance of our own eyes, if they militate against authority we are accustomed to think infallible.

Among those who have chiefly contributed to hand down and propagate errors respecting this disease, I would place in the foremost point of view Doctor Cullen, whose authority had the more influence, as he himself assisted in dissipating the errors and absurdities of the humoral pathologists, which he seems unaccountably to have retained in his consideration of the disease in question. In support of this statement, it is only necessary to recollect his opinion that scrofula arises from "a peculiar acrimony of the fluids," that the disease "rarely appears but in children whose parents had at some period of their lives been affected with it," and his belief, that when it fails to appear in the children of scrofulous parents, it may discover itself afterwards in their offspring in the succeeding generations; as also his reliance upon mineral waters, and his supposition that they produce their beneficial effects by "washing out the lymphatic system."

Though these opinions have not, with all practitioners, the influence which they once possessed,

yet with the majority they have great weight; but I hope that the simple statement of facts I shall offer, and the inductions which they naturally afford, will be sufficient to combat the errors alluded to.

The symptoms of scrofula which *obviously* arise from a disordered state of the digestive organs, are a tumid and tense abdomen, a swelled and chopped upper lip, itching and soreness of the alæ nasi, and irregularity of bowels, attended with green, black, and other unnatural evacuations. These symptoms in a greater or less degree precede the induration of the lymphatic glands of the neck and the other phenomena of scrofula, and continue afterwards to accompany the disease, sometimes constantly, sometimes occasionally.

The mention of these facts is sufficient to bring to the recollection of every practitioner the many times he observed and perhaps disregarded them; but I shall support my view of the matter by the evidence of a variety of cases at the conclusion of this essay. It may be objected that swelling of the lip does not obviously arise from disorder of the bowels; but this I have so frequently seen in children in whom there was no appearance of scrofula, whenever worms or other irritating causes affected the intestinal canal, that I have no doubt of its being strongly symptomatic of the circumstance in question. In confirmation of this opinion, Doctor Home asserts "that the swelling of the nostrils and upper lip is a more constant worm-symptom than any of the rest, that it accompanies the di-

sease where there is no suspicion of scrofula, and retires with the worm-symptoms";* and a medical friend informs me that a lady, his near relation, always knows when her child requires medicine by the swelling of the upper lip, which the exhibition of a purgative never fails to remove, although the child has not been troubled with worms.

It may even be shortly ascertained that the soreness of the edges of the eyelids which is a most constant symptom of scrofula, is caused by irritation in the *primæ viæ*. This idea was suggested to me by the appearance of that complaint in a young lady, who is very subject to worms, the presence of which she is always informed of by the inflammation and soreness of the tarsi, but at other times she is free from that symptom. I mention this solitary fact only with the view of exciting the attention of others to the subject. So decidedly however are the foregoing symptoms, either in part or collectively, the forerunners of the more obvious phenomena of scrofula, that I have been seldom disappointed in finding, in children, an indurated state of some of the glands about the lower jaw, whenever a pale, peevish, sickly look, a prominent belly, emaciation and wasting of the body, attended with keenness of appetite, indicate disorder of the system, even though swelling of the upper lip and other symptoms of scrofula should not be present.

In another place I shall consider the disorder of the digestive organs more at large; at present it is

* Home's Clinical Experiments and Histories, p. 465

sufficient to remark, that where chronic disorder of the bowels exists from an imperfect digestion of aliment, the body will waste away from want of sufficient nourishment; while the flaccidity and atony of the muscles that occur, remind us of the similar effects which always take place in the progress of scrofula.

In entering into a consideration of the circumstances which in children may produce disorders in the alimentary canal, it may be satisfactory to state a few cases, which prove that glandular swellings of the neck in infants are preceded and accompanied by a disordered state of the bowels; and that the removal of the former depends upon relieving the latter. Infants on the breast and in the second year are frequently affected with swellings of the glands at the upper and lower parts of the neck and in the axilla, which make their appearance suddenly, and increase rapidly, often to a considerable size, until suppuration is established: when they break, or are punctured, they are difficult to heal, remain a long time open, and though at first they evince more of the phlegmonous than of the scrofulous inflammation, yet afterwards they often assume the *characteristic* appearances of scrofula. Having observed the connection between disorder of the primæ viæ and the symptoms of scrofula, I was induced to inquire into the state of the bowels in these cases; and I universally found that the evacuations of the child were either green, black or slimy, for some time previous to the occurrence of the swelling. Within the last seven months I

took notes of several of these cases which occurred at St. George's Dispensary, and in private practice; and I shall transcribe a few of them, as their history must convey a clearer idea of their nature than any general description.

Case 1.

In the beginning of July, 1809, I was called upon to see an infant, three months old, affected with large tumours of a phlegmonous appearance on each side of the neck, immediately below the under jaw. On inquiry, I was informed that the child from her birth had never been regular in her bowels, and that her evacuations were constantly either of a green or black appearance. I directed a grain of calomel with six of rhubarb to be given every second night, and ten grains of prepared carbonate of lime, with two of carbonate of soda, every morning and evening.

This course had soon a good effect. In four or five days the evacuations became natural in appearance, the tumours were poulticed until they broke, and in about a fortnight were perfectly healed.

Case 2.

Edmond Burke, fourteen months old, was brought to St. George's Dispensary on the twenty-first of August, 1809, on account of a tumour, hard, red, and painful, extending under the lower jaw from one ear to the other, the commencement

of which was only observed by the mother four days before. His dejections, during the preceding six weeks, were of a green and sometimes of a black colour. I directed emollient poultices to the tumour, a grain of calomel with ten of rhubarb to be taken every second night, and fifteen grains of carbonate of lime with five of soda, morning and evening.

Under this treatment, the evacuations soon exhibited a natural appearance, the tumour broke in a week, and after discharging a considerable quantity of matter, healed in a fortnight more, like any common abscess.

I pointed out this case, as well as several others of the same description, to the attending physicians of St. George's Dispensary.

Case 3.

William Jackson, five months old, was brought to me on the twenty-first of September, 1809, with an inflammatory tumour on the left side of the neck, which was only observed seven days before. His mother informed me that his bowels had not been regular since his birth, but that he was attacked frequently by convulsions during the last fortnight, and that his dejections were of a green colour and sour smell. He was directed to take half a grain of calomel, with ten grains of prepared carbonate of lime, morning and evening. The frequent use of the tepid salt-water bath was also enjoined, together with warm cloathing and frequent hand rubbing.

Under this treatment, in a fortnight the evacuations became perfectly natural; about the same time the tumour broke, and soon afterwards healed without difficulty.

Case 4.

I was consulted about a child, four months old, on the fifth of October, 1809, who was affected with a large swelling, similar to those already mentioned, on the left side of the neck. She had been ordered poultices of sea-weed, by a physician of this city, I presume from an opinion of the scrofulous nature of the tumour.

The mother requested advice at the same time for a disordered state of the infant's bowels, which she said had never been regular since her birth: under the plan of treatment mentioned in the last case, both complaints were removed in four weeks.

Case 5.

Henry Collins, two years old, was brought to the Dispensary on the twelfth of October, 1809, on account of a large tumour situated under the lower jaw, and extending from one ear to the other; it was of an inflammatory red colour, and evidently contained matter. His mother informed me, that during the last six months he had not been regular in his bowels, sometimes affected by diarrhæa, and at other times with costiveness, and that his evacuations were sometimes of a jet black colour, but

more frequently green: she also mentioned, that the constant itching at his nose induced her to suspect the presence of worms, but she did not discover that he had ever passed any. His belly was remarkably tumid.

I directed two grains of calomel with ten of rhubarb every second night, and ten grains of carbonate of soda with half a drachm of carbonate of lime twice a day. In eight or ten days his bowels became perfectly regular, and the calomel was therefore only repeated twice a week.

On the sixteenth of October the tumour, to which emollient poultices had been applied, broke and discharged a large quantity of matter, but healed in three weeks afterwards.

Case 6.

On the eighteenth of November, Thomas Flinn, aged ten months, was brought to me on account of a hard, painful, inflammatory swelling extending from the groin, half way down the thigh, which was first observed about a week before. His evacuations were similar in appearance to those mentioned in the preceding cases, and his mother stated that from his birth he had been almost constantly ill of bowel complaints, which the countenance and emaciated appearance of the child sufficiently indicated.

The tumour broke in about ten days and discharged a large quantity of thin matter, such as is usually found in scrofulous abscesses, leaving a large

cavity which extended from the groin to the middle of the thigh. Under the plan recommended, his bowels were soon restored to a healthy state, he became stronger and more lively, and in six weeks from the time I first saw him the sore was cicatrized.

Case 7.

I shall select another example of this disease from a considerable number which I have noted, as it exhibits more than any other the scrofulous character.

On the twentieth of November, 1809, I saw E. M. a female infant eighteen months old, affected with a large prominent phlegmonous swelling, extending from below the chin to the left ear, which had commenced but four weeks before. She had a large tumid belly, and swelled upper lip and nostrils, symptoms which the mother supposed to be caused by teething, but were evidently indicative of the state of its bowels, which had long been irregular. The child was greatly reduced by a diarrhæa of green and black evacuations during the last six weeks. The plan of treatment mentioned in Case the second was adopted, under which the disorder of the bowels soon diminished, but was not completely removed in less than four weeks. The sore which succeeded the abscess assumed for some time the scrofulous appearance and character, but was cicatrized in six weeks after the abcess broke.

I had frequently met with tumours of the above description in infants, before I understood the con-

nexion that subsisted between their appearance and the disorder of the chylopoietic viscera. In consequence no attention was paid to the state of the bowels, and the tumours most frequently degenerated into obstinate sores, which put on the usual and characteristic appearances of scrofula. But even supposing that these tumours were not in any way entitled to the name of scrofula, their connexion and dependance upon disorder of the alimentary canal sufficiently establishes the point *that swellings of the lymphatic glands may arise from or be connected with disorder of the digestive organs;* and this is all that is at present necessary for our purpose in tracing the symptoms of scrofula to their source.

Having satisfied ourselves that the first symptoms of scrofula are those which denote disorder of the chylopoietic viscera, and that disorder of those parts is in early life frequently followed by swelling of the lymphatic glands of the neck, let us now proceed to consider the several circumstances which in childhood precede and induce this effect.

During the progress of scrofula, but particularly at the commencement of the disease, the appetite is greater than natural; it is even frequently ravenous; the tongue is clean and red, the gums I have observed also of a deep red and inclined to sponginess, symptoms from which it might *a priori* be inferred that the functions of the stomach remain unimpaired. But as we know that the desire for food is much greater than natural in some kinds of dyspepsia and in diabetes, the phenomena of which

have been satisfactorily traced by the interesting experiments and reasoning of Doctor Rollo to disorder of that viscus, we are not authorized to suppose that the stomach is not in fault in scrofula because the appetite is good; but rather we would be induced to draw a contrary conclusion, as like diabetes, scrofula is in general accompanied by keenness of appetite, and at the same time with wasting and emaciation of the body. But without at present referring to any disorder of the stomach for an explanation of the phemomena, we may possibly find another solution of our difficulties a little lower than this viscus.

The comparatively greater bulk of the liver to the weight of the body, in infancy than in adult age, naturally suggests the idea that the biliary secretion is in early life of still greater importance than when the body has advanced to maturity—an opinion that is strengthened by the frequency of the alvine excretions for a considerable time after birth, loaded with bile, and their gradual diminution as the body increases in size; and this increase of body not attended with a corresponding enlargement of the liver. The derangement of this organ, whose functions appear so much more essential in infancy, must probably therefore be more severely and more frequently felt in early than in advanced years; a position that is supported by the general use of calomel (whose character has been long established for promoting the biliary secretion) in almost every disorder of childhood.

The bile is universally allowed to be useful in stimulating to action the muscular coat of the intestinal canal, and thus promoting the passage of its contents. It is also considered as an excretion by which is conveyed away a large proportion of the exhausted materials of the body; and Fourcroy supposes that it separates the alimentary from the feculent portion of the chyme, the salts of the bile remaining with the former, the resin and albumen with the latter. But there are other offices which this important secretion performs that are equally deserving our attention, one of which Doctor Cullen considers in his physiology to be the correction of the acidities which are formed in the stomach. His words are: "It is especially the bile, added to the matters which have passed from the stomach into the duodenum, that is fitted to cover the acidity which appeared in the stomach. It is probable also, that the pancreatic and intestinal liquors contribute to the same effect; and it is perhaps for the same purpose that lymph is constantly added to the chyle in its course."

Doctor Saunders also, when assisted by a more accurate knowledge of the component principles of the bile than could have been known in Doctor Cullen's time, entertained a similar opinion. His observations are the more valuable to me, as they are of essential service in explaining why disorder of the bowels, the great cause as I suppose of scrofula, so frequently occurs in children, while they are at the same time free from any suspicion of being intended to support any favourite opinions.

Having detailed his analysis of the bile, which contains as we know a portion of uncombined soda, and a bitter resinous substance, we find the following passages —*

" When we take a view of the constituent parts of the bile, as clearly ascertained by the foregoing chymical experiments, it seems very probable, that from its resinous bitter, it may counteract any active and spontaneous changes to which animal and vegetable matter would otherwise be subject; and that as the propensity to acidity in our vegetable aliment is extremely obvious, the alkaline matter of bile tends to correct it."——" One important part of digestion is ultimately perfected in the upper end of the duodenum; and as perfect digestion is always opposed to fermentable changes, the bile is well calculated to finish that process." And again in a note we find, " It has been already proved in the course of those experiments, which have been before related, that there is in bile a resinous substance, in which resides the colouring principle and bitter taste. This bitter resembling the vegetable bitter, has probably properties in common with that, and is capable of resisting the fermentation going on in the stomach, and alimentary canal, when any of its contents are disposed to run into this state. When it comes into contact with these substances, it may act as a chemical agent, and produce such a change upon them as shall prevent that process to which they are disposed.

* Saunder's on the Liver, 2nd edition, page 127, 128, 164.

"That this is the effect of the vegetable bitter on other occasions, constant experience evinces, in the use of hops, by which beer is prevented from proceeding so rapidly to the acetous fermentation.

"The alkali which is discovered as a constituent part of the bile, may serve to neutralize the ascescent matter when it prevails in too high a degree, and *thus prevent any mischievous effects which might arise from its continuance in that state during its passage through other parts of the system.*"

Such are the opinions of Doctor Saunders respecting the utility of the alkali and bitter resinous principle of the bile, in retarding or preventing the acetous and putrefactive fermentations in the intestinal canal. But as his conclusions were never, I believe yet brought to the test of experiment, I resolved to satisfy myself on the subject, and tried the following

EXPERIMENTS.

1.—Two equal portions of muscle were put into different vessels; on the one was poured as much bile of a pig newly slaughtered as was sufficient to cover it, and on the other the same quantity of water, in order to bring both into an equal state with respect to moisture. On the fourth day, the portion in water was evidently putrid, while the other was not in the least tainted.

2.—Two portions of sweet milk were put into

separate vessels; in one there was about a fourth part of its weight of bile added, the other remained unmixed: on the third day the milk which was unmixed changed litmus paper to a faint red, on the fourth to a bright red, and on the fifth day the milk was both sour to the smell and taste, while that mixed with bile, after the same lapse of time betrayed neither signs of putridity or ascescency.

The thermometer during these experiments stood at 48°, and pig's bile was made use of, because the digestive organs of swine are like those of man, capable of assimilating both animal and vegetable substances; and besides was preferred to human bile for experiment, as it could be got from an animal in the vigour of health, and also perfectly fresh.*

It was formerly thought, that fermentation could not take place where there was not a free admission of air; but we now know that it takes place even in an exhausted receiver, where little air can be

* After these experiments were tried, the fourth edition of Doctor Saunders's Treatise on the Liver, which was just published, arrived in this city. If I had seen it sooner I would probably have thought the above experiments unnecessary, as he, in that edition, states that "Experiments executed with great accuracy and fidelity, sufficiently prove that the bile is less disposed to putrefy than any other animal fluid; and that it even preserves in a sweet state animal substances, which when exposed to similar circumstances of fluidity and heat, without the admixture of bile, would in a shorter time have assumed the character of putrefaction."—(Page 166, fourth edition.)

supposed to exist, except such portion as should happen to be disengaged from the substance under experiment, whose particles being separated by the disengagement of air, run perhaps more speedily into fermentation than if the pressure of the atmosphere had not been removed: on which account, it is probable that fermentation would even take place sooner in a stomach whose digestive powers are weakened, than in a receptacle fully exposed to the air under a similar degree of heat and moisture.

Fermentation, it is true, cannot go forward without the presence of oxygen; but is there not a sufficient proportion of oxygen for this process taken in with our aliment during mastication? and to facilitate the absorption of this principle seems to be one of the uses of saliva, a secretion remarkable for its attraction of oxygen, and the readiness with which it gives it out to other bodies. The oxygen thus absorbed by the saliva must answer some useful purposes in digestion; and is probably the first step in the assimilation of aliment to the body, of which it is destined to form a component part.

If digestion is perfect, no fermentable changes can go forward; but if the contrary is the case, there is every reason to conclude, from the symptoms that attend indigestion, flatulence, swelling of the belly, eructation of acid matter, &c. &c. that fermentation does actually take place; and it seems from what has been mentioned, that there is a sufficiency of oxygen taken in with, or forming a component part of our food for the purpose.

It should be recollected, as adding to the argument, that in order to promote the acetous fermentation out of the body, so as to procure the strongest vinegar possible, vessels are employed which have only a very small opening for the admission of the external air.

Many no doubt are of opinion, that the acids which are found in the intestinal canal of dyspeptic persons are secreted by the vessels, and poured ready formed into that receptacle.

Richter, for instance, says that "Acid in the primæ viæ is certainly of two kinds, arising from two different sources; it is sometimes plainly the consequence of a *corruptio spontanea* of acids taken in by the mouth, or of meat and drink which have become sour; and in this case it only incommodes the patient when he has taken such meat or drink. It is easily or constantly blunted by alkaline or absorbent medicines, and keeps away as long as the patient carefully uses a *dieta antacida*—medicines which strengthen digestion, with an antacid diet generally cure the patient of this acid. But sometimes," he continues, "the patient is incessantly tormented with acid, eat what he will, even though he only takes animal food: even when he takes nothing at all the acid torments him. None of the medicines which blunt acidity are of any use, or they only procure him a short mitigation.—And in this case the acid is not the produce of a *corruptio spontanea,* but a *secretio perversa liquorum menstruorum.* The patient, as Kempf says, *has a brewery of vinegar in his stomach.* The di-

gestive fluids themselves are sour, because an irritation acts on the secretory organs, and so deranges their operations, that they make out a very different product from what they should do."*

Now this explanation in no way accounts for the air which distends the stomach of a dyspeptic person, particularly that which occurs in some little time after he takes in food; except indeed it is supposed that the air is secreted as well as the acid, a supposition that is too absurd to require a moment's consideration, even if the presence of the air and acid in the stomach (the latter of which has been proved to be vinegar†), was not satisfactorily accounted for by the accession of the acetous fermentation in that organ.

On this subject Doctor Fordyce explicitly observes as follows: "I am led to conclude that the formation of acid in the stomach, during digestion, is always

* Richter's Medical and Surgical Observations, translation, page 190.

† "We find it happen frequently," says Doctor Fordyce, "that a quantity of acid is brought up by vomiting; which acid being saturated with kali, produces kali acetatum." As a further proof of the fact, I collected a quantity of the acid contents of infants' stomachs, which when filtered afforded about half a pint of clear liquid. I saturated the acid in this fluid with carbonate of potass, and evaporated it to a dry uncrystalized mass. Doctor Barker, professor of chemistry in the university of Dublin, took the trouble of examining it; and although there was not sufficient of the mass to afford an accurate analysis, he found on pouring sulphuric acid upon it, that the presence of vinegar was denoted by the vapour that arose, which betrayed the pungent and peculiar smell possessed by the fumes of the acetous acid.

produced by digestion not going on perfectly; the powers of the stomach not being sufficient to overcome the disposition of vegetable substances to run into the saccharine, vinous and acetous fermentations; and that when the organs of digestion are weak or disordered, or when we give an animal food not adapted to its organs of digestion, a greater or less portion of the food is not governed by the stomach, but runs into the fermentations which would arise if they were not influenced by its power."

It is the action of the gastric juice upon the aliment which prevents the accession of fermentation, and not as some have supposed the situation of the food within the body of a living animal. If the latter position was true, the urine *could* not putrefy and generate ammonia within the bladder, when morbidly retained; but as this circumstance does take place, we need not be surprised to find that the contents of the stomach will run into the acetous fermentation, whenever there is a deficiency or vitiated state of the gastric juice; but may rest contented with the unequivocal proof afforded by the flatulence that attends dyspepsia, and the production of the acetous acid in the stomach.

But even Doctor Fordyce, who removed so many prejudices concerning digestion is of opinion, in seeming contradiction to his own tenets, that the situation of the food alone within the living stomach prevents those natural changes, which it would undergo in a dead one under the same circumstances of moisture and temperature; and supports his opinion by the analogy of the blood, which he says

" does not putrefy in the vessels of a living animal, although if contained in the vessels of a dead animal in the same heat, and in all other circumstances as similar as possible, it putrefies in a few hours." But the analogy is inaccurate; since the great John Hunter has sufficiently proved, that the blood partakes as much of the principle of life as any part of the body; and consequently it must putrefy in the vessels of a dead animal, it being itself deprived of life. We do not indeed know but that the wonderful process of digestion may impart to chyle a similar property; but until the food is changed into chyle, it must certainly be subject to the laws of dead matter.

Unnoticed as they have hitherto been, there are many symptoms in common to diabetes and scrofula which are well worthy of observation. In both there is a greater appetite than natural for food, attended at the same time with emaciation and wasting of the body: there is also flatulence, and the fœces are in general either of a green or black colour. In the commencement of scrofula, when the belly is tumid, I have always observed that the skin is dry and scaly, the tongue red and clean, and the gums of a deep red and inclined to sponginess; appearances which are always present in diabetes.— And in the only accounts I have met with of the examination after death of diabetic persons (those related by Doctors Home and Rutherford*), it appears that the mesenteric glands were greatly enlarged.

* See Home's Clin. Experiments and Edinb. Med. Journ. v. I.

This coincidence of symptoms naturally leads to the conclusion, that the two disorders arise from one common origin, *Indigestion;* but that its effects are modified by the different states of the body at different periods of life.

Doctor Rollo, who has thrown so much light upon the origin of diabetes, is of opinion that the sugar which is formed in that disorder is owing to "an increased morbid action of the stomach, and probably too great a secretion with vitiation of the gastric fluid." Now instead of an increased morbid action in the stomach, is it not more probable that the disease is simply owing to a want of action or power in that organ? its contents are thereby allowed to run into fermentation, which does not proceed beyond the production of sugar, and the means he made use of with so much success naturally operated by checking or preventing the continuance of that process.* This opinion is strengthened

* Upon this doctrine of the origin of diabetes, may be best reconciled the success attending the very opposite modes of treatment made use of by Doctor Rollo and Mr. Watt.—(See Edinburgh Medical Journal, No. 19). The former gave animal food in as large quantities as the stomach could bear; the latter repeatedly bled, purged, and restricted his patient to the utmost abstinence from every kind of food: yet success was attendant upon both these very opposite plans; for both lessened the tendency to the saccharine or acetous fermentations in the primæ viæ. The former, by not supplying matter capable of falling into these fermentations; and the latter, by removing out of the body not only the produce of fermentation, but the matter undergoing that process, and likely to communicate it to all fresh matter taken into the stomach. And also by supplying aliment

ened by the disengagement of air or flatulence which attends diabetes, a circumstance that I have an opportunity of observing in a case of diabetes that is at present in the hospital of the House of Industry.

Most bowel complaints in infancy and childhood have been long attributed to the presence of acidities generated in the primæ viæ, and have always been most successfully combated by a treatment grounded upon that opinion—the exhibition of absorbent earths, which neutralize the acids, and calomel, which promotes the secretion of bile, a fluid which contains an uncombined alkali. However, as this opinion of the prevailing cause of disorder of the bowels in children might admit of a doubt, I determined upon seizing every opportunity that should occur, of examining the contents of the primæ viæ of infants and children, particularly of those who died of bowel complaints; and I found in every instance of subjects from birth to five years of age, (one only excepted), that the contents of the stomach and small intestines changed paper stained with litmus to a red colour of a greater or less degree of brightness. In an infant a month old, who had disease of the bowels from birth, the red colour produced was actually as high as would be occasioned by vinegar. The instance above alluded to (in which I did not find the presence of acid

in such small quantities, as might be within the digestive powers of the weakened chylopoietic organs. But undoubtedly, on the principles I have offered, considerable improvement in the treatment of this disease may be adopted.

indicated in the stomach and small intestines), respected a child, three years old, that died of swelling of the feet during severe cold weather, which terminated in mortification. She had been taking under my direction, previous to her death, carbonate of lime and soda, with occasional doses of calomel, on account of scrofulous enlargement of the glands of the neck.

It is not however to be supposed that from these facts I would conclude, that in a state of health acids are generated in the primæ viæ during childhood: I conceive only that they prove a natural predisposition to their production, which takes place whenever their digestive powers are weakened, a circumstance that must always be the case before death.

I did not find the same disposition in adult subjects; for except a slight indication of ascescency in the stomach, the presence of acid in their bowels was not denoted by any change of colour in vegetable blues.

In the large intestines even of the youngest infant I did not find any indication of acid, a circumstance that is probably owing to the accession of the putrefactive fermentation in the lower part of the canal, and the consequent production of ammonia. This fact evinces that an acid may be present in the stomach and small intestines, and be productive of disorder, without being discoverable in the fæces of the patient.

The bile in the young subjects I examined, which in general resembled treacle, was thickened and

changed to a bright yellow by the addition of vinegar; a change which rendered it precisely similar to the contents of the small intestines. This similarity of appearance suggested an idea, that the yellow colour of the fæces of children who live upon vegetable aliment, might be owing to the mixture of the bile with the acid of the intestines.

In the foregoing facts there is reason to conclude, that in infancy and childhood there is naturally a pre-disposition to the generation of the acetous acid in the primæ viæ, from the accession of the acetous fermentation; and that this process actually takes place whenever digestion is imperfect. We may also infer, that one use of the bile is to correct or prevent the production of acid by the bitter resinous principle and the disengaged alkali it contains; and therefore, that independent of any deficiency in the digestive powers of the stomach, a deficient or vitiated secretion of the bile may be a frequent cause of imperfect digestion, and consequently of the production of acid in the bowels of children.

When it is considered that the first symptoms of scrofula are an enlarged belly, swelled upper lip, irritation at the nostrils, and irregularity of bowels, with green and black coloured fæces, all of which continue during the progress* of the disease, and

* The word progress is to be particularly considered as meaning that state of the disease in which it is gradually gaining ground. For indurations of the glands, and disease of the

severally denote disorder of the digestive organs; and when it is also considered that disorder of those organs in children is accompanied by the generation of an acid in the alimentary canal, we are justified in considering scrofula as a disease arising from and generated by disorder in the bowels, and that the treatment most likely to be successful, would be grounded on the indications of neutralizing the acid formed in the primæ viæ by alkalies and absorbent earths, of promoting a healthy secretion of the gastric juice and of the bile, by exercise, tonics and mercury, and of preventing as much as possible the further formation of acid in the bowels, by restricting the patient to a diet easy of digestion, and free from ascescency or disposition to the acetous fermentation.

This plan of treatment, and the success attendant upon it, will be the subject of the two succeeding chapters; but the consideration of the remote exciting causes of the *disorder* of the digestive organs, which precedes and accompanies the more obvious symptoms of scrofula, will at present more properly engage our attention.

bones, may remain long after the cause which produced them has disappeared. and while the digestive organs are in a healthy state; but when this happens, those symptoms are in a gradual state of amendment, if the organization of the part has not previously been irreparably injured.

Want of due Exercise, occasioning a vitiated state of the Digestive Juices, considered as an exciting Cause of Scrofula.

A deficient or vitiated secretion of the gastric juice and bile (the chief causes of indigestion) may originate from a natural weakness of fibre, which produces so languid an action in the heart and blood-vessels, that the functions of the stomach and liver as well as of every other organ in the body are imperfectly performed. But scrofula can seldom be justly attributed to this origin; and I have strong reason to believe, that the most frequent cause of an inert state of the gastric juice and bile, is a want of wholesome exercise. Every one has experienced how much the due performance of the functions of the stomach, and consequently the secretion of the gastric juice, depends upon due exercise, particularly that taken in the open air.—And the secretion of bile I believe to be still more dependent upon the general exercise of the body; not only from the symptoms which take place in the sedentary and inactive, but from a view of the nature and situation of the hepatic system.

The secretion of the bile is performed by veins; on which account, it is more dependent upon the general exercise of the body than any other secretion. To understand this perfectly, it is necessary to recal the readers attention to one of the most common and established principles of physiology, viz, that veins are in a great measure dependant

upon the action of the muscles in their neighbourhood for the motion of their blood, as during their contraction they press upon the veins, and urge their contents onwards towards the heart: but all other secretions are performed by arteries, which are more immediately under the influence of the heart than veins, and possess innate powers themselves of propelling their contents: the organs which they supply are therefore less dependant upon external causes than the liver for a due supply of blood.

These circumstances being premised, if we consider the situation of the liver, and of the veins which unite to form the vena portæ, we will at once acknowledge how much the circulation in this organ, and consequently the due secretion of bile, is dependent upon the exercise of the body.

The liver is placed immediately under the diaphragm to which it firmly adheres, and thus the perpetual action of this muscle in respiration causes a constant motion and reiterated pressure of that viscus. This motion is however greatly increased during active exercise, which hurries respiration.

The veins that unite to form the vena portæ return the blood from the stomach, spleen, and intestines; and during exercise, these parts are all forcibly compressed by the muscles which form the parietes. of the abdomen. Their blood is then urged briskly onwards from their branches to the main trunk (the vena portæ), which afterwards, like an artery, breaks into ramifications in the liver, but is totally dependant upon the vis a tergo for the

due circulation of its blood and secretion of bile.—Hence we cannot for a moment doubt, that the vessel which secretes the bile is dependant upon the exercise of the body for the due performance of this the most important secretion in the system.

The alternate contraction and relaxation of the diaphragm, fulfils in some degree an object so important to life, as to be thus rendered independent of the will; but the motion of the diaphragm, in easy respiration, while the body is at rest, seems only sufficient to prevent, as it were, a compleat stagnation of the blood in the liver; but is not capable of obviating the diseases which arise from a languid circulation through that organ. And hence we see how much the due performance of digestion, over which the will has no immediate influence, is yet dependant in no trivial degree on the muscles, which are put in motion at our command; and thus it appears that not only is life a forced state of existence, so far as it depends upon the necessity of taking in nourishment, but that even the digestion and assimilation of that nourishment to the body, require the assistance of active exercise and labour. So true is it that man was intended to earn his bread by the sweat of his brow, or incur the visitation of diseases, which seem to be the natural and necessary punishment awarded to idleness.*

* In the second volume of the Edinburgh Medical Journal is an execellent paper, by Doctor Faulkner, of London, "On the degree to which Exercise should be carried in the cure of some varieties of Dyspepsia," which proves most decidedly that sluggish exercise, though unremittingly and regularly perse-

The comparatively greater bulk of the liver, and its more abundant secretion in childhood to that of adult age, indicate, on the principles I have laid down, the necessity of superior bodily exertion in early life. And there is in consequence at that period a natural propensity and an unconquerable desire for exercise in children, which should be as little impeded as possible by those who have the care of rearing them. And certainly the education of youth might easily be so conducted, as that the periods of study and sedentary employment might be intermingled and relieved with those of recreation and active exercise; an object too much neglected, but which if properly attended to, would conduce at once to the improvement both of body and mind.

There is another point of view in which a sedentary life may be considered as affecting the quality of the biliary secretion, as well as the different fluids subservient to digestion that are poured into the intestinal canal. The bile we have seen contains an excess of alkali; the gastric, pancreatic

vered in, is not sufficient to remove the symptoms of dyspepsia, and its attendant train of evils. The author of this paper says: "I hold it as a circumstance of indispensable consequence in the treatment of dyspepsia, that exercise be employed to the extent of promoting a free and copious perspiration; and I conceive that the less violent the exertions are for this purpose, the effects will be the more happy and permanent." It is unnecessary here to trace, in what manner active exercise and a free perspiration increase the powers of digestion, as I would only have to recapitulate what has been said in the preceding pages.

and other juices secreted into the intestinal canal are neither acid nor alkaline; while the excretions of the skin, kidneys and lungs on the contrary contain an excess of acid, as may be readily proved by the change of colour they produce upon vegetable blues. Now it is reasonable to infer, that if these excretions which carry off the different acids formed in the body* become deficient, from want of due exercise or other causes; the acids which they ought to carry off will be secreted into the intestines, and among other injurious effects, will vitiate the gastric and pancreatic juices, and neutralize more or less the alkali contained in the bile; a principle of that secretion which we have seen is so important in the process of digestion, particularly during childhood, when there is a natural pre-disposition to the production of acid in the intestinal canal.

Nor does a want of due exercise occasion an accumulation of acid in the body, only by rendering the cutaneous and urinary excretions deficient in quantity, but by vitiating the quality of the different digestive juices, the aliment is allowed to run into the acetous fermentation in the intestinal canal, and thus indirectly increases the proportion of acid in the body.

* The following acids have been discovered ready formed, and constituting a part of the human body:—

1. Phosphoric,
2. Muriatic,
3. Carbonic,
4. Benzoic,
5. Uric,
6. Rosacic,
7. Oxalic,
8. Acetic.

There are also many others mentioned by chemical writers.

A too sedentary life always produces a constipated habit of bowels, for without the frequent pressure of the abdominal muscles, which takes place in exercise, their own peristaltic motion seems insufficient for the passage of their contents.

These considerations often induced me to request persons of languid sedentary habits to overcome their natural disposition so far as to make use of some violent exercise even for ten or fifteen minutes every morning; and in the use of this simple regimen, they found it was no longer necessary to recur to the repeated doses of opening medicines, to which they had been accustomed. General exercise produces the passage of the alimentary matter in a two-fold manner: first, it exites a plentiful supply of bile, the natural stimulus of the muscular coat of the intestinal canal; and secondly, it assists the action of the intestines by the mechanical pressure occasioned by the frequent contraction of the muscles which surround the cavity of the abdomen.

It may justly be apprehended, that where a vitiated or inert secretion of bile continues to be furnished, that the liver would at length become organically diseased; and certainly in several instances of Scrofula which came before me, the liver appeared on examination much larger than is even usual in childhood. Still I was inclined to doubt a circumstance so difficult to ascertain with precision, although I found that organ considerably larger than natural, in a case where I had an opportunity of examining, after death, the body of a

child six years old, who had been affected with scrofula. However, I found in Lieutand's Dissections several instances of scrofula and disease of the mesenteric glands, accompanied by enlargement of the liver, which effectually removed my doubts.

In Observation 521*, he details the appearances on dissection of a girl seven years of age, who had been subject all her life to a variety of complaints, particularly to œdematous swellings about the joints

Obs. 521.—Puella septennis per totum vitæ curriculum variis ægritudinis fuit obnoxia; præsertim vero tumoribus ædematosis, circà articulos manuum, cum ossium carie, dein accedunt sperandi difficultas et cordis palpitatio. Tandem marasmo confecta obiit. Inveniebatur intestinum cœcum, cum sua appendice vermiformi, crassimum, quasi meris glandulis rubentibus conflatum. Conspiciebantur mesenterii glandulæ tumidæ et schirrhosæ. *Hepar plus justo magnum, ejusdem mali consors apparebat.* Ventriculus flatulentia distendebatur. Pericardium denique aquâ turgebat. (Casp. Bauhinus.)

Obs. 525.—Puer octodecim menses natus, febre inordinatè ecurrente, *appetitu canino, et diarrhœa biliosa* laborabat. Tandem marasmo confectus, et exolutis viribus animam efflavit. Instituta cadaveris sectione, deprehendebatur hepar stupendo molis et scirrhosum; cum cyste fellea suprà modum tumente. Lien etiam ingens tartaream substantiam exhibebat. Ac postremò glandulæ mesenteriæ omnes tumidæ et schirrhosæ conspiciebantur. (E miscellaneis curiosis.)

Obs. 526—Puer triennis *imum ventrem ultra modum prominentem,* paucis abhinc mensibus gestabat cum febre lentâ, cibi fastidio, *alvi fluxu contumacissimo* et stupendâ totius corporis emacitione. Tandem abdomine ulteriùs renitente, atrophia confectus, supremum diem obiit. Reserato abdomine, in conspectum venit mesenterium mole amplissimum, et scirrhosum. Hepar quoque ingens, et similis læsionis consors deprehenditur. (E nostr. adversar.)

of the hands, with caries of the bones, followed by difficulty of breathing, palpitations and marasmus. The cæcum, with its vermiform appendix, was found very much thickened, bearing the appearance of red inflamed glands. The glands of the mesentery were enlarged and schirrous. *The liver of a greater size than natural appeared also to share in the disease.* The stomach was distended with wind, and the pericardium with water.

Observation 525.—A boy eighteen months old was affected by irregular fever, ravenous appetite, and bilious diarrhæa, which at length carried him off. On dissection, *the liver* was discovered to be *scirrhous, and of an immense size.* The gall bladder unusually swelled. The spleen was also diseased; and the mesenteric glands were all indurated and enlarged.

Observation 526.—A boy three years old, with a very prominent belly, was affected by lingering fever, want of appetite, and obstinate diarrhæa, and great emaciation of the body; at length worn out by the disease, and his belly protruding to the last, he expired. On examination the mesentery was found scirrhous and greatly enlarged, *the liver was also of great size and appeared equally affected by the disease.*

From these dissections it appears, that enlargement of the mesenteric glands, which, we shall soon see, precedes the other symtoms of scrofula, is accompanied by organic disease of the liver and disorder of the bowels. Which of these is the primary disease, I trust the reader is sufficiently pre-

pared to decide; I shall not therefore repeat what I have already enlarged upon, but proceed to prove by facts how far the deficiency of exercise lays the foundation of scrofula.

I long had reason to suppose that a want of wholesome exercise conduced materially to the production of the disease; but the following instance of the prevalence of scrofula, which could scarce be ascribed to any other cause, incontestibly proves the fact.

In St. Thomas's parochial school there are twenty-four girls, in every respect well fed, clothed and lodged, yet seven out of this number were, in the summer of 1809, affected with scrofula, although not one had the disease when admitted. On the most minute enquiry, there was not any reason to attribute the prevalence of the disease among them to any defect in diet; but during the preceding Winter and Spring, a very small yard their only playground was flooded in consequence of heavy rains, and the mistress of the school had received directions at the same period, from some of the governesses to keep the children perpetually within doors at their school-books, and this cruel and impolitic injunction totally deprived them of the little exercise to which they had been accustomed. In a short time from the commencement of this sedentary life, scrofula began to make its appearance, and afterwards affected near a third of their number: yet I was informed that before their privation of exercise, not one of the children was affected by the disease; although at that period they

were treated so indifferently in respect of diet, that the woman who then superintended them was afterwards dismissed from her situation, on account of the bad quality of the provisions she provided for their use. But it seems her total inattention to them allowed them the liberty of playing and exexercising as they chose; and to this circumstance they owed their health, for they made such good use of their liberty, that not one of them showed the slightest symptom of scrofula, until they were for some months accustomed to confinement.

The circumstances attending the appearance of scrofula in this school afford, in my mind the strongest evidence that can be adduced of the influence of a sedentary life, in the production of the disease; and also evince, that with due exercise the digestive organs are in a great degree capable of assimilating aliment of an unhealthy kind. Numbers of the robust and laborious, we know, make use of aliment which is undergoing the putrefactive or acetous fermentation, with impunity; while the puny and sedentary can not even digest the most wholesome nutriment. In the one the fermentation of vegetable and animal food is instantly checked, but in the other it is allowed to proceed without any opposition.

But this is not the only instance that has come under my observation of the ill effects of depriving children of the exercise they are so anxious to enjoy.

In Bethesda school there are thirty girls who are fed in the best possible manner, and indeed on

a diet which few charitable institutions could afford, but out of this number there were in the summer of 1809, six badly affected with scrofula; although when admitted there was not one who showed any appearance of the disease. But there was no difficulty in discovering its true source, for there was neither yard nor playground attached to the institution, and the children were necessitated to remain either in the school or bedrooms during play hours. At a meeting of the governors of the institution which I was requested to attend, I stated my opinions respecting the cause and prevalence of scrofula in the school, and have every expectation that their attention to the institution will supply the defects, and remove the ill consequences I have mentioned.

The prevailing opinion, however of the cause of scrofula may still induce many to attribute its prevalence in the two institutions to an hereditary predisposition. But let the most prejudiced of my readers recollect that these children were not affected by the disease when admitted, and that they had then almost past the period of life, at which scrofula is most apt to make its appearance. Nor should it be forgotten that in one of these institutions, the disease did not show isself till after the children had been deprived of their accustomed and natural exercise, the want of which I can not but consider, in these instances, as the exciting cause of the disease, and therefore we may conclude generally, *that want of due exercise is an exciting cause of scrofula.*

Cold moist Air considered as an exciting Cause of Scrofula.

There are, however other exciting causes, which solicit our attention; among which cold moist air stands the foremost, having been noticed in that point of view by most modern writers who have considered the subject. I shall take the liberty of extracting a passage from Mr. Russell's treatise on scrofula, the latest publication on the subject, as it contains his local information respecting the cause in question.

" Of all occasional causes," Mr. Russell remarks, " climate is the most powerful. The extremes of heat and cold are equally free from scrofula. It prevails most in those climates where the atmosphere is perpetually loaded with cold vapours, where the seasons are variable and no weather is steady: from latitude 45° or 50° to latitude 60° is the principal climate of the scrofula. The climate of Scotland, which is within this range, is remarkable for the frequent occurrence of scrofulous complaints. When the temperature of the air is just above the freezing point the cold is the most difficult to bear, on account of the great quantity of watery vapours which float in the atmosphere: a greater degree of cold condenses the aqueous vapours and renders the air clear, a greater degree of heat disperses them. Accordingly, it is an universal observation both in the torrid and the frigid zone, that perfectly dry

air, whether produced by great heat or great cold, always brings the most healthy weather."

From these facts and observations which coincide with those of other writers, it appears that scrofula prevails most where the air is cold and moist. Now a cold moist air retards or suppresses the escape of the perspirable matter, and aqueous vapours of the lungs; and we have elsewhere considered how far a suppression of these excretions, by affecting the quality of the digestive juices, may operate towards the production of scrofula in children, who perspire much more in proportion than adults, and are universally thought to contain more of the acidifying principle. And certainly, a cold moist atmosphere is counted a most powerful exciting cause of dyspepsia; which I conceive evidently operates in the production of that disorder, by checking the cutaneous and pulmonary excretions. Doctor Townsend* observes, that "the most common source of dyspepsia is exposure to cold fogs. This may evidently be seen in Holland, and in the fenny parts of England. I have observed," he says, "the same disease prevailing in the northern parts of Spain which are exposed to cold and damp, but I never saw it in the south."

Scrofula as we have seen is precisely under similar circumstances, and we certainly find that the disease is always checked during the summer months, when perspiration is most abundant, while on the

* Guide to Health, page 119.

contrary it makes progress during winter and spring, while cold and moisture are most prevalent. Besides, I have observed in the early stage of scrofula or of the mesenteric disease, when its advances are most rapid, that the skin is dry and scaly, a certain sign of the suppression of the perspirable matter.

The Ecanthemata considered as exciting Causes of Scrofula.

Measles, scarlatina and small pox, when confluent, are frequently productive of scrofula. On the principles I have laid down, this circumstance may originate from the disturbance and disorder they occasion the organs of digestion; and certainly if acescency of the primæ viæ, and organic disease of the liver and mesenteric glands, in those complaints, are any confirmation of these opinions, I have it fortunately in my power to offer that proof. At my request, Mr. Kirby, lecturer on anatomy and surgery at Mercer's Hospital, was so kind as to let me examine the intestinal canal of six or eight small subjects, in the beginning of January, which he had procured for the purpose of injecting. Among the number was one, about two years old, covered with confluent small-pox. On opening the abdomen in the presence of Mr. Kirby, the liver appeared greatly enlarged, and of a pale, mottled, ashy appearance.

The mesenteric glands were also much enlarged and of a red inflamed appearance. The contents

of the stomach and small intestines changed litmus to a red colour; but what surprised us most, was the bile of the gall-bladder, which betrayed equal signs of acidity, and must have been therefore incapable of performing its office of correcting acescency of the priæ viæ. It was of a bright yellow colour, and as fluid as the serum of blood.

I know not whether similar morbid appearances have been observed by others, in confluent small-pox; but coupled as they are with the frequent occurrence of scrofula, after that disease, I cannot but feel myself justified in concluding, as far as one morbid dissection will authorise, that scrofula is owing in such instances to the disordered state induced upon the organs subservient to digestion, and upon the skin, which for so great a length of time must be incapable of transmitting the perspirable matter.

From this view of the state of the chylopoietic viscera after the exanthemata, the old practice of exhibiting purgatives, though under the mistaken idea of removing the dregs of the disorder, seems not to be so unnecessary as we are at present taught to believe; for the frequent use of opening medicines will remove any undigested matter which may accumulate in the bowels after these disorders, and will thus prevent the ill effects which would arise from its absorption into the circulation. We also see the necessity, after these complaints, of proportioning the aliment to the powers of the weakened digestive organs; and of promoting their vigour, by exciting the action of the cutaneous vessels by

exercise, friction, and the use of the tepid salt water bath.

Acescent Diet considered as an exciting Cause of Scrofula.

The next exciting cause of scrofula relates to the aliment of children. From a great variety of cases which shall be detailed, I have reason to conclude that acescent diet, or diet of an acescent tendency, may justly be considered as a powerful cause of the disease; but particularly when combined with a sedentary and inactive life: and then I conceive these two causes are irresistible, and would produce the disease in the most healthy children. I shall therefore briefly consider the qualities of the different articles of diet made use of during infancy and childhood, and first of all the human milk.

The human milk differs in many material respects from the milk of all other animals that has been hitherto examined; but varies in the proportion of its component principles from the period of parturition until it naturally ceases to be secreted. It differs from cow's milk, which is most frequently used in its place, in the proportion of curd it contains; which is so trifling in quantity, that Doctor Clarke of this city thinks, from his experiments,* that it contains little or none of that principle: however, it is described by Rutty, Parmentier, Sti-

* See Transactions of the Royal Irish Academy, v. VI.

prian, Young and others,* as containing curd, but in a far less proportion than cow's milk.

The most material difference however, and that which is most connected with our present subject, is the different dispositions of the two milks to the acetous fermentation. From the experiments of Stiprian, it appears that the human milk requires a fortnight or longer to become sour, and that sometimes it will remain for months without undergoing the acetous fermentation. Doctor Clarke also observes, that he constantly found cow's milk acquired a greater degree of acidity in thirty-six hours than the human did in many days. The little disposition to the acetous fermentation seems to be evidently a wise provision of nature, against the production of acid in the primæ viæ of infants, to which there seems to be a natural disposition, whenever their digestion is imperfect.

Yet Doctor Clarke seems to be of opinion, merely from the difficulty with which the human milk becomes sour out of the body, that the general opinion of the prevalence of *acidity* in the alimentary canal of infants is founded in error; and asks "If we find milk out of the body so very slow in running into an acescent state, does it not afford presumptive evidence, that the milk of nurses cannot be so very prone to run into acidity in the stomachs of infants, as authors endeavour to persuade us?" Certainly it does: but if Doctor Clarke had taken the trouble of opening the bodies of infants who

* Johnston's Animal Chemistry, vol. I.

had died while sucklings, and for which it seems he had ample opportunity in the Lying-in Hospital, he would have found the presumption to be wrong; as the reader may be convinced from the numerous trials I have mentioned. Nor does he much strengthen his argument, by refuting the opinion that the green colour of fœces is owing to the mixture of bile with the acid contents of the intestines. I have already stated that vinegar, which we have seen is often formed in the primæ viæ, changes bile to a yellow colour; and also that the contents of the small intestines, though yellow in innumerable instances, reddened vegetable blues, while those of the large intestines of the same subject, even when of a green appearance did not change the colour of the rest. This fact, which an examination of the intestinal canal could only ascertain, affords sufficient proof, that the test which Doctor Clarke proposes as an experimentum crucis for ascertaining the presence of acids in the primæ viæ, viz. an examination of the fœces with vegetable blues, is totally insufficient for that purpose, and he might as properly have tried the self-same experiment in the case of a nautical adult, to discover whether he had dined most plentifully upon his salt junk or sour krout.

There are none of the wise provisions of nature more admirable than those which are intended for the wants and support of the infant. Before birth a quantity of matter accumulates in the infant's bowels, which it is necessary should be evacuated immediately after birth, as otherwise its retention

becomes the source of the most obstinate bowel complaints; and for this purpose, we find the maternal milk for the first three or four days endued with a purgative quality, and much better adapted to the strength of the infant, and the object in question, than any drug that could be substituted in its place.

Nature is however too often thwarted in her designs by indiscreet interference. In more than one instance I have been consulted on account of abscesses in the breasts of women after lying-in, which I traced to the omission of suckling their infants during the first three or four days after delivery—a period in which the breasts are naturally so swollen with milk, that if not emptied the nipple becomes retracted or concealed within the general enlargement of the breast: the infant is in consequence unable to obtain its nourishment, and the retained milk becomes the source of inflammation and abscess. I was not a little surprised to hear from one of these ladies that this mal-practice was directed by her *accoucheur*, a man in high repute and business. I have since understood that his constant direction to his patients is, that they shall not suckle their infants until after the third day; but as he has not published his opinions on this or any other subject, it would be indelicate publicly to enquire if him the grounds of a practice, which appears equally destructive to the health of mother and child.

Modern chemistry has discovered another proof of the care which nature takes to supply the various

wants of infancy. Before birth, it is necessary that the bones should be somewhat flexible, in order to fit the infant for its situation in the uterus, and for its passage into the world; therefore they should contain but little of the phosphate of lime, which gives them solidity. But to produce this effect immediately after birth as rapidly as possible, we find that the mother's milk is charged with a much larger quantity of that earthy salt than it ever afterwards contains; and that it gradually diminishes, while the nutritive parts of which the milk is composed increase in an inverse proportion.

From these facts, it is evident that there can be no substitute adequate to supply the place of the human milk, or whose use is not attended with risk to the health and life of the infant; and that the nurse's milk should correspond with the age of the infant, in order to supply the nutriment it requires.

To medical men it is scarcely necessary to insist farther upon the truth of these inductions; but as this essay may possibly fall into the hands of persons who have the care of children, it may be useful to enlarge a little more upon a topic of the utmost consequence to succeeding generations.

First—The little disposition to sourness or putrescency in the human milk, compared to that in cow's milk, evinces that the latter cannot be substituted in its place though diluted with water or modified in any way, without the almost positive certainty of producing, more or less, disorder in the bowels of the infant.

Secondly—That these facts present an invincible argument in favour of mothers nursing their own offspring; for it does not often occur that a nurse can be found, whose accouchement happens so opportunely as to afford all the advantages to the infant which it would derive from its parent's milk. For instance, the purgative quality of the milk for a few days after the birth of the child, the necessary proportion of the principle which gives solidity to the bones, combined with a nourishment completely adapted to the digestive powers of the infant. The subsequent and gradual increase of the more nutritive principles of the milk, equally adapted to the digestive organs, but which at an earlier period might resist their power, and lay the foundation of a disordered state of bowels so fatal to infants.

If these facts were generally known, the natural tenderness of mothers would induce them, with few exceptions, to perform an office for their children, which under these considerations would appear to them an imperative duty—a duty which brings with it another equally imperative, the care of their own health. The happiness of rearing a vigorous family is a motive sufficiently strong to sway with most women, without any consideration of the interest excited by so beneficial a display of the maternal character, or the advantage it would bestow on society by the diminution of disease and discouragement of dissipation.

I have met with many instances of infants affected with the most obstinate and frequent attacks of

disordered bowels, while suckled by nurses, whose milk was several months older than the necessities of the child required, and many cases of scrofula under similar circumstances.

But to establish the position, that milk is in all instances injurious, if it does not correspond with the age of the infant, must require more general observation than can fall to the lot of an individual not engaged in the practice of midwifery. I therefore do not positively assert that the disease originated in those instances from the cause suggested, but the circumstance seems extremely probable from the chain of facts I have stated, and the inductions they afford. It may be questioned, if the prevalence of scrofula in many great families, is not chiefly owing to the practice of committing their offspring to the care of hirelings, or nurses, whose milk is not of an age corresponding with the necessities of the infant; but it is pleasing to observe, that in the higher ranks nursing is at length become fashionable, and affords a gratifying prospect to every mind that reflects on the evils resulting to society from mothers abandoning their offspring to the neglect of others, who in their turn must in the same manner abandon their own.

It is a common practice with persons who have the care of children, to cloy them with sugar and sweet-meats, which are often given in considerable quantities. Nay, some think that this substance, of which children are so fond, is nutriment well calculated for their time of life. I know not but this may be true respecting children whose digestive

organs are vigorous; but I am sure that a substance that promotes fermentation so rapidly, must be injurious to those who are weakly and subject to disorder of the stomach and bowels.

In one of the worst cases of scrofula I have met with, and which continued even to manhood, the disease was attributed by the mother of the patient to his eating a large quantity of manna that was accidentally left in his way.

I have already stated that cow's milk is disposed to run with rapidity into the acetous fermentation; but this disposition is considerably corrected by boiling, as it is found that boiled milk will remain several days sweet at a temperature that will turn unboiled milk sour in twenty-four hours. A knowledge of this circumstance should induce those who have the care of children to make use of this simple precaution, which may prevent disorder of the bowels or worse maladies. But the use of diet, which has actually become acescent from fermentation, cannot be too much reprobated. Although in this country sour butter-milk, either mixed with sweet milk, or alone, is the most common article of diet among the children of the lower classes.

In the last chapter, it will be found, that this very article of diet seems to have been the exciting cause of scrofula in many cases detailed. But although acid, which is the product of fermentation, is injurious when taken in any considerable quantity, the native vegetable acid of fruits is by no means so. The different effect of those acids has not I believe been accounted for; but we very well know that

scurvy (a disease supposed to depend upon a deoxygenated state of the system) cannot be cured by the fermented vegetable acid, although it will yield quickly to *native* vegetable acid. The probability is, that fermented acids approach too nearly the state of the animal acids, to be capable of producing any but injurious effects upon the animal economy. Indeed they are so identified with each other, that vinegar has been found in the perspirable matter.

Infants at the time of weaning are from the change of diet particularly subject to bowel complaints, too often followed by disease of the mesenteric and lymphatic glands. This disorder has been ably considered in Doctor Cheyne's Essays upon Diseases of Children.

I shall take the liberty of giving an abstract of one of his cases, which strengthens considerably the foregoing considerations. A child eleven months old, a fortnight after being weaned, was affected by purging; her stools were in general green and sour smelling, and the disease was slowly gaining ground, which at length put a period to her life. On dissection, it was found that at several parts of the intestinal canal there were contractions and intus-susceptions, but no appearance of inflammation; on the contrary the intestines appeared peculiarly white and free from blood, but upon spreading out the mesentery, some of the lacteal glands were found much enlarged and considerably inflamed. Doctor Cheyne accompanies the case with

a drawing, in which the glands are delineated as very much enlarged.

I was mentioning to Doctor Cheyne, the satisfactory corroboration his cases and dissections afforded to my opinions of the origin of scrofula, in consequence of which he had the kindness to send me the following statement, which I shall insert *verbatim*:—

Gardiner's Street, Oct. 17, 1809.

"Dear Sir,

"In turning over one of my case-books this evening, I found the following note which was made last summer. It is a confirmation of your observations on the origin of scrofula, which you will perhaps think of some value, and therefore I send it to you without making any apology.

"I am, dear Sir,

"Yours truly,

"J. CHEYNE."

"I have attended some children, of scrofulous "families, who died of the mesenteric disease with "a general glandular affection, as proved by dissec- "tion, whose complaints commenced with restless, "feverish, thirsty nights; fullness, hardness, and "tenderness of the abdomen; loose unnatural "stools; wasting of the flesh, and regular hectic. "I have traced these complaints to neglect and "mismanagement in diet, and in one or two in- "stances distinctly to the child's having been "allowed to swill as much milk as it chose. And

" in other children (two of whom are but just " recovered), I have evidently stopped the progress " of the disease by the use of the warm or tepid " salt water bath, by purges, calomel, in alterative " doses, entire disuse of milk, animal decoctions, " afterwards Port wine (sometimes largely with " apparently excellent effect), proper cloathing, " and exercise in fine weather. Has not this, the " acute stage of the mesenteric disease, been over- " looked?"

My own observations being thus strengthened by those of Doctor Cheyne, it appears evident that neglect and mismanagement in diet, is capable of inducing disease of the mesenteric glands. Now the affection of these glands is generally supposed to precede the appearance of the external marks of scrofula. Wiseman observes, " Whenever the outward glands do appear swelled, you may safely conclude the mesenteric be so too, they being usually the first part that is attacked by this malady." White, and several modern authors who treated upon scrofula, entertain the same opinion; and Lieutand, in his dissections, states a number of cases of scrofulous affections of the external glands, which were found on examination after death to be accompanied with diseased mesenteric glands*; and

* Obs. 547.—In cadaveribus variorum puerorum, qui strumis extus fœdebantur; mesenterium exhibebat tumores congeneres, avellanæ & nucis juglandis magnitudine; nonnullis pugni molem æquantibus; qui omnes materia quadam gypsea, vel purulenta erant refertæ. (Pardus.)

in all his observations relative to disease in those glands in children, we find that the patient was affected with frequent pains in the bowels, tumid belly, irregularity of the alvine excretions, diarrhæa, slow fevers and marasmus.*

For my own part, I never yet saw a subject in the dissecting room, with strumous glands externally, without a similar state of those of the mesentery; but have very frequently seen the latter, unaccompanied by any affection of the external glands. A circumstance which, in my mind, indicates that in scrofula the mesenteric glands are the first affected; and that the absorbent glands of the neck, and other parts, become diseased in succession, in a way which it is difficult to ascertain, but from the facts stated in this chapter, and the inferences arising from them, I feel myself justified in concluding that they originate from disorder of the organs of digestion.

* Vide Obs.—517, 518, 519, 522, 525, 526, 529, 532, 535, 545, 546. (Hisotria Anatomica Medica Auctore Josepho Lieutand.)

CHAPTER II.

THE TREATMENT OF SCROFULA.

HAVING so far ascertained that indigestion is the proximate cause of serofula, and that the remote causes are weakness of fibre, a want of due exercise, damp cold air, and acescent diet; the indications of cure are evidently to restore the digestive organs to the due exercise of their functions by the necessary attentions to diet, air, and exercise, and by the administration of medicines capable of correcting the morbific products of indigestion, and of exciting a healthy state of the digestive secretions.

Though the symptoms which collectively form scrofula do not usually make their appearance until after the second year from birth; yet as the foundation of the disease is most frequently laid in the earlier stages of infancy, by neglect or mismanagement, which induce a debilitated state of fibre, it will be necessary to take a short view of the diet, exercise, and general treatment of infants.

Diet.

The great advantages which children derive from being nursed by their mothers, have already been sufficiently detailed. It is only from this source that they are likely to derive a nourishment adapted

to their powers of digestion, and corresponding to the gradual developement of their organs, and the varying wants of their system. But when ill health or other circumstances prevent a mother from performing this duty, the nurse she employs should be delivered on the day of her own accouchement, if she hopes that her substitute will efficiently supply her place; and when the time approaches in which it is proper to wean the child, it should be gradually accustomed to such nutriment as is to be afterwards its common food.

Too much care cannot be taken in supplying a diet corresponding to the powers of digestion, and unlikely to run into the acetous fermentation. The general and indiscriminate use of cow's milk (unboiled) has been the frequent cause of disorders of the bowels, and worse complaints; but more particularly in delicate and weakly children, in consequence of its great tendency to acescency, which would be quickly induced in the heat and moisture of the stomach, if taken in greater quantities than the digestive powers were capable of assimilating.

For the meals of such children, I have directed with evident advantage equal parts of *boiled* milk and lime water.

Fermented bread is the diet of children as well as of adults; but in this state, though so healthful and pleasant for the latter, it is not equally so for the former, as it is certainly more disposed to become acescent than unfermented bread, the acetous fermentation having been stopped in its progress by the process of baking. Boiled wheat, rice,

barley, and oatmeal, appear to be a diet much better adapted for the infant state. Boiled wheat is much used in Ireland for the diet of children; it is prepared for their use by simmering it four-and-twenty hours over a slow fire. The country people call it furmity, and it is certainly a nutriment well suited to the digestive powers of young children, and the *peculiar* necessities of their system.*

Oatmeal is less nourishing than other grains, as it contains a far greater proportion of earths; but it may therefore be useful where acescency is suspected in the bowels. From the combination of the earths of this grain (like magnesia) with the acids of the primæ viæ, may result the opening quality of boiled oatmeal—an article of diet which I have found most salutary for such children as are subject to disorder of the bowels from acescency, have tumid bellies, and are disposed to rachitis and scrofula.

As to the propriety of giving animal food to children there is a great diversity of opinion: but as

* "Phosphate of lime exists in the farina of wheat. La Grange remarks, that a person who eats a pound of farina a day, will swallow three pounds, six ounces, four drachms and forty-four grains of phosphate of lime in the year. It is a curious fact, that the grain of wheat should contain *phosphate* of lime, while the straw, which was not intended for our food, should contain *carbonate* of lime only. It is remarkable, that, though the phosphate of lime is always found in the urine of adults, this salt is not evacuated by infants: the rapid formation of the bones in the first periods of life requires that there should be no waste of any of the phosphoric salts, and nature ever provident has provided accordingly." (Park's Work on Chemistry, page 273.)

its use should in a great measure be determined according to the constitution of the child, there can be no absolute rule laid down; however, I think generally speaking that it should be given to children in very small quantities, more particularly to those who are either very young or very delicate: for so far from adding to their strength, it will have a contrary effect if not within their powers of digestion; and even if it is, its use may occasion so much excitement in the system, that debility will follow proportioned to the excessive action induced. This excitement is more obvious after the use of old meats, as beef and mutton, which are more stimulating than the flesh of domestic fowls and young animals: the latter is therefore best adapted for the early periods of life. Some white species of fish, as also shell fish, are very nutritious, without being stimulating; and for this reason have probably been much recommended in scrofula.

The use of animal food of all kinds has been highly extolled in this disease, with the view of giving tone and strength to the fibre; and on the principles I have laid down, it is equally adapted to the occasion, by preventing acescency in the primæ viæ.

The quantity, as well as the quality of the food allowed to children affected with scrofula, should be particularly attended to; for as their appetite is *morbidly* increased, and their powers of digestion at the same time deficient, they should receive but little food at a time, and the quantity they are capable of digesting should never be exceeded. But

an attention to this particular is peculiarly necessary after the commencement of the disease, when its progress is always most rapid.

All esculent vegetables are difficult of digestion, and disposed to the acetous fermentation; therefore are not so eligible in a disease which has been found to be attended by indigestion, as animal or farinacious food. However, vegetables may be allowed in small quantities when the disease is on the decline; but are totally inadmissible as long as the belly remains tumid, accompanied with soreness and swelling of the alæ nasi and upper lip, and irregularity of bowels: symptoms which so clearly denote imperfection in the process of digestion.

Wine is very generally ordered for children affected with scrofula, from an opinion of its strengthening powers; but I have seen it given in a great number of instances without any amendment, and in others with evident disadvantage. Its use is certainly against the principles I have laid down, as all wines, being the product of fermentation, are acescent or have an acescent tendency; even Port, notwithstanding the quantity of brandy it contains, will turn vegetable blues to a red colour. Fermented malt liquor, for the same reason, should be equally avoided. If it is however thought necessary to dose children with alcohol, for which I can see no good reason, a little old spirits mixed with water is to be preferred even to wine in this disease, as it may have in some degree the power of checking acescency, and certainly will not add to it.

Exercise.

A due degree of exercise demands our attention, not only as a preventative, but as a powerful auxiliary in the removal of the disease. Its effects I have considered as promoting health in three different ways: first—the assistance which it affords to the process of digestion, in promoting a healthy state of the digestive secretions, and in assisting the passage of the contents of the intestinal canal; secondly—in promoting the expulsion of the animal acids, by the secretions of the skin, kidneys and lungs: and, thirdly—by increasing the tone and strength of the muscular fibre, and thus preserving in due vigour the excretory and secerning vessels.

The benefits of exercise being considered in these three points of view, it is evident how much the *want* of it must conduce to the production of the disease, and its *use* towards its removal.

Young infants should be exercised as far as prudence will admit by their nurses, and the actions of the vessels of their skin promoted by frequent friction. They should not be wrapt up in long cloathing which prevents them from stretching and moving their limbs; on the contrary, every restriction should be carefully removed which may impede the little muscular powers they are capable of exerting. When passed the period of infancy, children should be allowed the enjoyment of exercise to the full extent of their wishes. All young animals are prompted by nature to use far greater muscular ex-

ertions, compared to their powers, than the adult or old; and when the nature of the animal economy is considered, the reasons of this propensity are evident, and have been already sufficiently insisted on: therefore, so far from preventing, every encouragement should be given to the active sports of children; and if, in contradiction to nature, they should have an aversion to exercise, every means should be taken to induce a contrary disposition, and promote exertions necessary for their health.

There can not be a doubt, that the present mode of education is calculated to debilitate the frame, from the long confinement children are obliged to endure in crowded and unventilated rooms. In fact, they should never be confined at their studies more than two hours at a time; a longer period can scarcely be attended with any advantage to their progress in knowledge, as their young minds are incapable of a more continued exertion; and if they are not allowed to indulge themselves frequently in recreation and play, they will only remain in mental as well as corporeal inaction.

At public schools, every third hour of the day should be employed in exercises of the most active kind, some of which should enter into the course of education in every well-regulated school. This practice, by rendering the body robust, will be attended with the national advantage of forming men that will be able, if ever it be necessary, to lend their assistance to the defence of their country. I not only allude to the healthy and fashionable exercise of the broad-sword and fencing, but to the use of

the firelock, and still more to infantry movements, which in large schools would be as grateful to the taste of the generality of boys, as conducive to their health and strength; and no one can doubt, in the present state of Europe, how much it would be a substantial advantage to the nation. They would return with renewed alacrity to their two hours study, which might be followed by the more moderate exercise of dancing; and this accomplishment will be found a useful expedient in female schools for dividing the hours of study. If these exercises were used as a recreation they might give birth to habits of idleness; but being performed as part of the system of education, and under the superintendance of masters, they would be free from this disadvantage; and the pupils would readily discriminate between the time thus spent, and that devoted to sports of their own option, unconstrained by their masters.

We have been hitherto considering the advantage of exercise more as a preventative than an auxiliary in the cure of scrofula; however, from what has been already said, it is evident, that when the disease is formed, exercise proportioned to the strength of the patient affords one of our most prominent modes of relief. Unfortunately, when the bones are attacked, and the vertebræ, the hip or knee joints are diseased, exercise is inadmissable, on account of the pain and injury it would occasion to the diseased parts; but even here, our only substitute, friction to the surface of the body should not be neglected.—This employed twice or thrice a day, will promote

the action of the cutaneous vessels, which will be still further assisted by the tepid salt water bath.—But we are too often deprived of the use of this great promoter of the health of invalids, by the pain occasioned even by a removal to the bath, when any of the large joints are affected.

The state of the air equally demands our attention with diet and exercise. As we have alteady seen that cold moist air weakens the digestive powers, and is a promoter of scrofula, it is evident, that as long as the patient continues exposed to it, every exertion towards a cure may prove unavailing. Consequently, situations that are elevated, and at a distance from swamps or stagnant water, should be chosen for the dwellings of those affected with scrofula. Confined and narrow parts of cities, where the exhalations that constantly arise among a crowded population, and accumulate from the want of free ventilation, must be equally injurious with low swampy situations in the country.

I have little doubt, that the good effects which have been attributed to bathing in the sea, is due with more justice to a change of air, and the exercise which children accustomed to confinement are induced to take in the country; for by far the greater number of those who are sent to the sea side, affected with scrofula, are inhabitants of cities.—The excitement of the vessels of the skin, induced by reaction and friction on coming out of the water, no doubt has a good effect in producing a restoration of health, as well as the constant practice of using salt water internally as a cathartic, the modus ope-

randi of which class of remedies I have already endeavoured to explain. But where children are so debilitated in constitution that their vessels are incapable of reaction when exposed to the sedative powers of cold water, and they remain trembling, inactive, and of a half livid colour, bathing is a remedy of a most dangerous and destructive nature, of the fatal effects of which I have known many instances; and I firmly believe, that the indiscriminate use of cold bathing, in this disease, destroys in a single year the lives of many more than it could relieve in a century. But the advantages obtained by air and exercise, it is a matter of course to ascribe to the sea bathing. I have heard a practitioner of considerable eminence who was a great advocate for this practice in scrofula, observe, that there must be some principle in sea water, the application of which to the surface of the body, had some secret influence with which we ase unacquainted. This is a mode of reasoning common to many, which, to say the least of it, will not make us much the wiser; and for my part, without looking to any occult principle in sea water that chemistry has not yet unfolded, or searching for any *secret* influence it may possess over the animal economy, I am satisfied with a more obvious and rational explanation.

There is probably no part of the empire in which scrofula is more general than in Dublin; and yet the inhabitants, but particularly the children, even those of the lowest class, enjoy the advantage every summer of sea-bathing. The same circumstance has been observed in other similar situations. Doc-

tor Hamilton of Lynn, in Norfolk, states, "that the town of Lynn is situated in low marshy grounds on a large haven of the German ocean, in which, during the summer months, sea-bathing is constantly used by people of all ages; "yet," he remarks, "it is no less strange than true, there are no where more distressed victims to the scrofula to be met with than at Lynn! and they are as frequently to be met with amongst the lower orders of the inhabitants, who are used to the water daily, as in the other ranks of life, whose business has no connexion with it. And in no inland town" he continues, "within my knowledge, which extends at least thirty miles around Lynn, did I ever see so bad cases of this disease as in this town, in a course of more than forty years practice." From these facts, it is impossible not to agree in the inference which Doctor Hamilton draws, "that if sea water and sea air were such specifics, surely the scrofula would be far less formidable at Lynn than at any of the inland towns."

Smollet also, in his travels through France, mentions that scrofula and rickets are two prevailing disorders among the children of Boulogne, although a sea-port town; and he suspects its prevalence is owing to the low putrid vapours in the neighbourhood of the town.

From these circumstances, respecting the inefficiency or rather injurious tendency of sea-bathing, when accompanied by an air loaded with moisture, or when the patients vital powers are so deficient that reaction does not follow immersion in cold

water, it may seem that I would discard it altogether in the treatment of scrofula. It may therefore be necessary to state, that though cold bathing from reasoning as well as from experience appears to me to be incapable of curing the disease, and that while we trust to it alone we in fact do nothing; yet, as an auxiliary, it should not be excluded where it does not interfere with more active means, whenever the strength of the patient is sufficient to produce reaction in the system—which is denoted after bathing by a quick return of warmth, and a glowing healthful appearance of the countenance, and an additional flow of spirits. The tepid salt water bath, however, cannot interfere with any rational plan of cure; and from its action on the vessels of the skin, is an auxiliary that can scarcely fail of being serviceable, and from which I have witnessed the very best effects.

The clothing of children affected by the disease should be warm; as warmth of the surface, but particularly of the extremities, promotes the action of the cutaneous vessels, and is well known to assist the energy of the digestive powers: however, the cloth ing should never be confined or cumbersome, or in any way restrain the natural propensity of children to the exercise of their limbs

Medicine.

Having thus brieffy considered diet, air, exercise and clothing, not only in the light of preservatives against scrofula, but also as means indispensable

among others for its removal; we have now to notice the medical part of the treatment, which, though, important, is not of greater consequence than the subjects we have just been considering.

From the principles laid down respecting the remote and proximate causes of the disease, it will at once be seen that there is no necessity for any *specific*, or new remedies, to fulfil the indications of cure founded upon them. In fact, I have found that some old remedies judiciously applied, and steadily persevered in for a short time, when accompanied with the other attentions mentioned, *invariably* produced the most decided and rapid amendment—a fact which will be proved by cases (chiefly selected from public institutions), which, at the same time that they evince the efficacy of the treatment, tend to corroborate the opinion I have already advanced, that scrofula is not a disease depending upon any specific acrimony or virus, but is merely produced by a disordered state of the digestive and excretory organs of the body.

I usually commence my plan of treatment by the exhibition of a purgative, in order to meet the symptoms which denote a foul and overloaded state of the primæ viæ; for this purpose I prefer calomel, because, while it empties the bowels, it induces an increased secretion of bile, by its peculiar effects upon the hepatic system. Two grains of calomel may be stated at the medium dose for children under twelve years of age, combined with ten of rhubarb. To adults I usually give three grains, and always exhibit the medicine at bed time, as it will be more

likely to remain a longer interval in the bowels while the patient continues at rest, and is not exposed to any variation of temperature. Calomel given in this manner, increases the secretion of bile before we can suppose it to have entered the circulation, and through that channel affected the liver. On this subject, Doctor James Curry, in his letter to Doctor Saunders, makes the following excellent observation: "The mode in which calomel alone proves effectual is by emulging the biliary ducts; and the evidence and measure of its salutary operation, is the quantity of bile which it evacuates by stool; though its effects then be ultimately that of a cathartic, yet it is not simply as such that it is useful, but by acting specifically, and being (if I may be allowed an antiquated expression) a cholagogue, or evacuant of bile."

In the morning following the exhibition of the calomel, a dose of vitriolated magnesia, proportioned to the age of the patient, generally produces four or five evacuations. For the first eight or ten days, I repeat the calomel every second night, and the neutral salt the following morning, which never fails to lessen the tumid state of the belly, and the swelling and itching of the nostrils and upper lip. The patient, instead of being reduced by these evacuations, is really improved in appearance, health and spirits.

This plan does not interfere with the exhibition of the carbonates of soda and lime, which I give twice or three times daily to children under twelve years of age, the medium dose of which may be

stated at half a drachm of the former to double that quantity of the latter. To those more advanced in life, I give these medicines in as large doses as the stomach can bear without inconvenience.

After the first week or ten days, I generally omit the neutral salt entirely, and exhibit but one grain of calomel every second night, with ten grains of rhubarb; but in this I am determined by the degree of tumefaction of the belly, and swelling of the lip, invariably persisting in the neutral salt as long as these symptoms continue. Bitters or tonics I seldom employ, because their exhibition with the other remedies would be apt to cloy or overload the stomach; besides, I conceive that bitters can only be of service as a substitute to the bitter resinous principle of the bile, when that secretion is vitiated or deficient. And if the mercurial stimulus is sufficient to promote a healthy secretion of bile, the use of bitters would be superfluous; and I have had sufficient experience to satisfy me, that the remedies I have recommended are in general sufficient to answer every necessary purpose.

In two or three adult cases, I have lately ordered pills of asafœtida and aloes, with evident advantage. This combination was suggested by a remarkable case, related in Richter's Medical and Surgical Observations, of acid in the stomach, producing St. Vitus's dance, which quickly yielded to asafœtida and ox-bile, after a variety of other medicines had failed. As I had no ox-bile prepared for the purpose, I substituted aloes, and the good effects that followed this combination, induce me to think it will

be found extremely serviceable in this disorder. On the principles I have laid down, it may yet be ascertained that potash ammonia, and the different sulphurets, may be used with equal or superior success in checking acescency of the primæ viæ; but I have had no inducement to relinquish the use of lime and soda, while they were so serviceable in my hands in favour of substances which are certainly not so congenial to the frame as those under consideartion, and which I originally adopted in consideration of the quantities of those principles that naturally exist in the system.

The local plan of treatment is equally simple with the constitutional. If there are sores, the mildest dressing is the best: stimulating applications I have observed always to do harm. If there are glandular swellings, friction twice or thrice a day with the hand or the flesh brush, and the use of electricity, assist in their discussion; but these applications should not be employed, until the general remedies have been persisted in for some time, and such a diminution of the tumours becomes observable as indicates that the disease is on the decline. Tumours however often remain stationary for a long time, notwithstanding every means that can be employed for their discussion; but if they do not increase, or new ones form, while the patient is evidently improved in health and spirits under the plan recommended, we may look upon them as mere *local* indurations, which will dissipate in time, if assisted by friction and electricity; however, in such cases it will be the more secure plan to persevere in the use of the

internal remedies until no vestige of the disease remains.

When the tumours are discoloured and evidently contain a fluid, it is doubtful what mode of treatment is to be preferred. Some recommend emollient poultices and early openings, and others are equally strenuous against any interference whatsoever. Without presuming to decide this question, I shall mention, that the practice I have pursued is to leave them to nature, and only apply poultices when pain is caused by distention of the skin; and never on any account to open them, whatever may be their size. My reason for pursuing this mode is, that I have seen large unseemly cicatrices, where the lancet has been used; and on the contrary, have frequently observed very large scrofulous abscesses leave very trifling marks after them, when allowed to break spontaneously.

The treatment I have found most serviceable in disposing scrofulous sores to heal, is the application of finely levigated chalk, thickly sprinkled on the surface of the ulcer, and covered by lint spread with any mild ointment.

Simple as the plan may appear which I have laid down for the treatment of scrofula, its adoption was only determined on after a variety of other remedies had been tried during a watchful attention to the rise, progress, and symptoms of the disease, in a very considerable number of patients whom I had the advantage of attending at the same period. My first inducement to pay that attention to scrofula which the investigation of an obscure disease re-

quires, with any chance of success, was for the purpose of ascertaining the value of the muriate of lime, concerning which there has been a great diversity of opinion among medical men. This preparation had been recommended by Mr. Ingham, of Newcastle, to the notice of Doctor Wood, who introduced it to the public in the Edinburgh Medical Journal, for April, 1805; and since that time, it has been very generally used in every part of the United Kingdom. In the summer of 1807, I tried it upon eight or nine scrofulous children, beginning with ten drops of the solution three times a day, and increasing the dose gradually to a hundred or a hundred and twenty drops. Few could bear more than the latter dose, as in that quantity it was apt to produce disorder in the stomack and bowels.—The medicine was persevered in for five or six months, during which time amendment was evident in all, and even in some cases extensive sores healed under its use: but the disease continuing in the majority almost stationary, induced me to think of improving upon the remedy. Scrofulous affections of the bones particularly attracted my attention; and their frequency inspired a vague notion, that the disease was owing to a deficiency of lime in the system. These considerations induced a suspicion, that the muriate of lime had produced all the amendment I witnessed, by supplying a sufficiency of that principle. But my present experience leads me to think, that its good effects were owing to its checking the acetous fermentation in the intestinal canal.

However, under the impression I then entertained, I naturally conceived that the earth of bones themselves (phosphate of lime), would be a more appropriate and successful remedy; and therefore I determined upon trying it, combined with phosphate of soda, in the manner recommended by Bonhomme for rickets, whose success with this combination in that disorder tended not a little to raise my expectation of its efficacy in scrofula, when I considered the close connexion that exists between the two diseases. After several months exhibition of the phosphates of lime and soda, in doses of from one to two drachms, three times a day, I found my hopes by no means realized, the disease remaining stationary, neither better or worse, in the greater number of cases, and in only one or two did there appear any amendment.

Among those upon whom I tried these preparations were fifteen children of the Foundling Hospital, whom Mr. Creighton, surgeon to that institution, had the goodness to place under my care; but during my attendance, I began to perceive the connexion which existed between a disordered state of the digestive organs and the phenomena of scrofula; and in consequence, in June, 1809, adopted my present plan of treatment, under which a *palpable* and *rapid* amendment took place among those children during the short time they were under my care. But owing to the prejudice of some of the governors in favour of sea-bathing, the children were removed to the coast, and of course my plan of treatment was abandoned.

The reader will be hereafter acquainted with the opportunities that furnished themselves of proving the utility of this plan.

Let me, however, acknowledge, that the medicines I found so successful have been frequently recommended by other writers* for this disease; but as their administration was not guided by any rational principle, or governed by a knowledge of the disorder, but was managed by the caprice of the practitioner or the fashion of the day, they could not now and then produce those good effects *by chance*, which they are capable of accomplishing *with certainty*, when their exhibition is conducted on the grounds I have established, and the object in view is pursued with judgment and perseverance.

* In Pliny, lib. 36, cap. 24, p. 723, is a passage, by which we learn that lime was used by the ancients in ulcers and strumous swellings, both singly, and combined with vinegar: in the latter state therefore forming acetate of lime. In almost every old author, we find carbonate and phosphate of lime recommended in scrofula, under the imposing form of pearls, coral, and crabs' eyes. Soda has been a long time administered under the appellation of burned sponge: more lately it has been given in combination with bark, as recommended by Kirkland. Wiseman, who seems to have been more successful than any since his day in the treatment of this disease, used brisk purgatives of calomel and infusions of senna and rhubarb, *which he repeated as long as swelling of the lip remained.* Doctors Fothergill, Fordyce, and Sir Clifton Wintringham recommended bark with occasional doses of calomel; and the latter medicine is the sheet anchor of Mr. White, which he recommends in his valuable Treatise on Scrofula, on account of the well known influence of mercury upon the absorbent system.

CHAPTER III.

CASES OF SCROFULA, AND GENERAL OBSERVATIONS.

BEFORE I proceed to detail the cases, it may be satisfactory to premise, that in their relation I have been anxious to render them as brief as possible; and therefore have omitted any particular description of tumours and ulcers which are so well known that they are sufficiently characterized by the epithet *scrofulous*. My attention was chiefly directed to exhibit in their histories such facts as either proved their connexion with disorder of the digestive organs, or the utility of the plan of treatment recommended.

The result of most of those cases was decisively successful; but I have stated one or two others, for the purpose of demonstrating the connexion between scrofula and disorder of the digestive organs which came so lately under my care, that a sufficient time has not yet elapsed to evince in those particular instances the advantages of the mode of cure adopted. It was my intention to commence each case with the appearance of the eyes, hair, and complexion of the patient, in order to prove the truth or fallacy of the received opinion, that a peculiar constitution, indicated by blue eyes, fair clear skin, with florid complexion, and light hair is

most pre-disposed to the disease. However, I soon found that as many with brown or sallow skins and dark hair were affected by scrofula as those of the former description; therefore, though I noted the appearance of each patient for my own satisfaction, it would be as unnecessary as irksome to the reader to have the same circumstances so often repeated.—The following comparison, however, of the appearances of those children affected by the disease, whom I saw since May, 1809, either in public institutions, or in private practice, may be satisfactory to many:—

Children affected by scrofula, with *fair delicate skins, light hair*, and blue eyes	21
Children affected by scrofula, with *sallow* or *brown skins, dark hair*, and blue eyes	23
Children affected by scrofula, with fair, sallow or brown skins, dark hair, and *hazel* or *black eyes*	25
Children affected by scrofula, with *very florid complexions*, brown skin, and black hair and eyes	3*
Total	72

From comparing the above results, we find that persons with fair delicate skins, light hair, and blue

* These three were private patients, always accustomed to the comforts of the middle class of life; and probably the reason that so few of the florid complexion (which is generally looked upon as indicating a constitution pre-disposed to scrofula) were in the above number, was, that a great majority of the cases were seen in charitable institutions, where the patients were of course exposed to poor diet, want of clothing, and other necessaries of life, which I have considered as exciting causes of scrofula.

eyes, are not more prone to the disease than those of a different temperament. However, it appears that the patients with blue eyes were nearly double the number of those with hazel or black eyes, but blue eyes are more common than others. The number of patients with florid complexions was very small; but the florid complexion is the most rare in cities; it is in general the concomitant of good health; and it is scarcely necessary to remark, that the complexion brightened in all as the disorder was overcome; and the many who were at first pale and sallow, became in a few months healthful and ruddy.

Case 8.

In June, 1809, I was called upon by a respectable shop-keeper on Ormond Quay, to see two of his children who were affected with scrofula. The eldest, a girl ten years of age, had an extensive ulcer situated on her left cheek, with induration and enlargement of the parotid gland, which had commenced three years before. The patient had a brown skin, remarkably florid complexion, with black hair and eyes; her bowels I was informed were frequently irregular, and the soreness with swelling of the alæ nasi of this child, and her brother, attracted my attention so strongly, as to give birth to the enquiry I have already detailed.

She was ordered two grains of calomel, with ten of rhubarb every second night; and half a drachm of carbonate of soda with a drachm of prepared

carbonate of lime three times a day. A diet, consisting chiefly of boiled milk, farinacious food, and fish, was recommended. Under this plan amendment immediaetly took place, and the sore healed completely in the August following, leaving no induration, and but little cicatrice.

Case 9.

The brother of the girl mentioned in the preceding case, aged eight, was exactly of a similar appearance and constitution; and the disease commenced about the same period in both. His glands below the under jaw were enlarged and ulcerated, his abdomen was of a natural size, but his bowels were irregular, being alternately costive and loose, and he was constantly picking at his nostrils, which were red and sore.

Under the plan of treatment recommended he was well in the month of October following.

Case 10.

A young lady, aged thirteen, of a healthy appearance, was brought to me for advice in June.—Her diet had always been nourishing, and her mode of living regular. Her parents, whom I had an opportunity of examining, had not any marks of the disease; but she had a scrofulous tumour and ulceration of the glands immediately below the chin, which commenced two years before. Some time previous to the appearance of the disease, I was in-

formed that she was brought from the country, where she was reared, to Dublin, and had been ever since leading a confined and inactive life, quite opposite to her former habits. To my enquiry concerning the state of her bowels, I was informed that she was regular, but this I am inclined to doubt; for, from the view we have taken of the effects of exercise and pure air, in promoting the action of the digestive organs, I cannot think it probable that digestion could have been performed with the same regularity in a young person, who was deprived of the exercise and purity of air, to which she had been accustomed from her infancy. However, let this be as it may, exercise was recommended just so far as not to produce fatigue; and she was put upon the same regimen and course of medicine as in the two preceding cases, under which treatment her general health and spirits rapidly improved, and both the ulceration and tumour disappeared in less than three months.

Case 11.

Mathew Ward, aged twenty-one, a pale, slender, ill-formed man, who was affected with the disease since he was five years of age, applied to me in June, 1809. At this time, the glands beneath the ears and jaws were greatly swelled and uclerated: there was also a large ulcer upon the sternum, and another upon one of his legs, with an enlargement of the bone.

I directed him to take two grains of calomel, with

twenty of rhubarb every second night, and a drachm of carbonate of soda with two drachms of carbonate of lime three times a day. A diet of farinacious and animal food was strictly enjoined, and abstinence from all fermented liquors. The ulcers were sprinkled twice a day with carbonate of lime finely levigated, over which was laid lint spread with spermaceti ointment.

In six weeks, under this plan, the ulcers upon his neek and breast were healed, and the glandular swellings considerably diminished; and in ten weeks the ulcer of the leg was cicatriced: the swelling of the tibia however remained undiminished. I saw him in the January following: the ulcer of his leg had broken out again, which seemed to be owing to disease in the bone; and the swellings of his neck, though greatly diminished, had not completely dispersed. However, the improvement in this case is so marked, as to afford the most decisive testimony in favour of the treatment recommended. The patient himself said it was the only plan he had ever found of service, though he had bathed every year in the sea, and incessantly dosed himself with bark, and other medicines, under the direction of professional men.

His mother assured me, that neither she nor her husband, or any other individual of her family, had any appearance of scrofula. To my enquiries if her son when a child was much subjected to bowel complaints, she informed me, that until four years old he was remarkably healthy. At that age, he found his way to a drawer containing three or

four pounds of manna, with which he glutted himself daily until he finished the entire. Constant disorder in his bowels was the consequence, his belly became tumid, he acquired the appearance of a ricketty child, and in the following year the symptoms of scrofula first made their appearance. They continued perpetually ever since, but in winter and spring were always worse than in summer.

I have detailed in this case the information exactly as I received it; and as there could not have been any motive to deceive me, I think we need not hesitate to ascribe the appearance of the disease to the inordinate quantity of manna which the child had taken. All saccharine mucelaginous substances we know are powerful promoters of the acetous fermentation; but particularly in situations like the stomach, where heat and moisture contribute to the same effect upon all matter capable of undergoing that process. Hence, in this instance, the digestive powers might have been incapable of preventing the accession of fermentation, when promoted by so large a quantity of saccharine matter; at a period of life too when there is naturally a strong tendency to the production of *acidities* in the primæ viæ.

Case 12.

Ann Nowlan, aged eleven, a pale, sickly, emaciated girl, with tumid belly, swelling and soreness of the upper lip and alæ nasi, was brought to me for advice on the twenty-ninth of June, on account of large projecting scrofulous tumours which engaged

the upper part of the neck, and passed in a continued chain from one ear to the other. The skin was not discoloured, nor was there any fluctuation in any of the tumours, although they were present upwards of three years. She complained of frequent pain in her belly, her bowels were irregular, her dejections were of a black or green colour, and of so acrid a nature that they excoriated the anus; which symptoms, her mother mentioned, had long preceded the appearance of the tumours of the neck.

She had bathed every summer in the sea, and had taken large quantities of bark without any good effect. Instead of continuing this mode of treatment, I ordered her two grains of calomel with ten of rhubarb every second night, with three or four drachms of sulphate of magnesia the following morning. She also took the carbonates of soda and lime in the usual doses. In a fortnight, she omitted the neutral salt, and took one grain of calomel only every second night.

Under this plan, and the diet so often recommended, the tumefaction of the belly and soreness of the lip and nostrils subsided in a few weeks; her spirits were restored, and her general health so much improved, that she became robust and ruddy.

In three months the deformity occasioned by the projection of the swelled glands was removed; but they still remained like hard knots in the flesh.—Stimulating lineaments were frequently applied; and Mr. Duncan, electrician in this city, was so kind at my request, as to draw electric sparks from

the diseased parts every morning, which was attended with evident advantage.

Case 13.

In the Penitentiary in Smithfield for young criminals, there is at present a remarkable instance of the efficacy of the plan I have recommended. The patient was John Manners, a youth about nineteen years of age, whom Mr. Todd, medical visitor to that institution, was kind enough to place under my care, knowing that I was anxious to ascertain the efficacy of the mode of cure I have detailed.—The patient's constitution and appearance are evidently the reverse of those which are thought predisposed to scrofula: his hair and eyes are black, and his skin is sallow. The disease also occurred at an age when it spontaneously ceases in others; but by attending to the circumstances which preceded its appearance, these seeming aberrations from its usual course are readily accounted for on the principles I have laid down.

He was born with cataracts, which were of that tremulous kind that are supposed to denote an accompanying disease of the retina, and preclude the chance of benefit from operation. He was reared in the Foundling Hospital, where he remained until he was seventeen years of age, equally the favourite of his companions and superiors in that institution. For some petty fault, which by no means merited so severe a punishment, he was removed to the Penitentiary. This separation

from his early companions, and all who had any knowledge of him, to be placed among criminals, hurt his pride and preyed upon his spirits. His diet was not equal to that which he had been accustomed to; and his depression of mind, together with his blindness, prevented him from using any exercise whatsoever. General ill health followed; and in six months from the time in which he was removed from the Foundling Hospital, he was attacked with swelling and induration of the glands of the neck, followed by extensive ulcerations of these parts. Two large ulcers also made their appearance on his sides, and one of his feet became so much swelled and discoloured, that the tarsal and metatarsal bones seemed engaged in the disease, accompanied by an extensive ulcer of the instep, which also, from its fungous appearance, indicated disease of the bones underneath.

On the twenty-fifth of June, 1809, he commenced the course of medicine so often mentioned, in the same doses as stated in case 11. He was also allowed a sufficiency of animal food. An immediate and rapid amendment took place in his general health, and all the sores except that of the foot cicatrized in less than two months; and the swelling of the glands disappeared about the same period. The discolouration and swelling of the foot also gradually diminished; but the ulcer, though lessened to about one fourth of its original size, still remains open, and probably is prevented from healing by a diseased state of one of the metatarsal bones.

Case 14.

Francis Lemy, aged seven, a pale, sallow, weakly child, was brought to me on the twenty-first of September for advice. The disease, which commenced three years before, had attacked various parts of his body. The first symptom observed was the swelling of a finger on each hand, which gradually increased until the skin ulcerated; and at the time I saw him the bones were considerably enlarged. This was followed by by an extensive ulcer of the wrist, and two smaller ulcers above the elbow of the right arm. A large curvature of the dorsal vertebræ then succeeded, which was every day increasing, and attended with frequent severe pain in the part. His belly was tense and tumid—the hardness of the right hippochondrium left no doubt on my mind but that great enlargement of the liver had taken place. His bowels were irregular; and his dejections were in general either of a black or green colour—sometimes they were inclined to red, and his mother compared them to congealed blood. His tongue was clear and red, his appetite voracious, and he was constantly picking at his lip and nostrils which were sore and swelled. Several of the profession had been consulted, who enjoined the necessity of constant sea-bathing, which was in consequence made use of from the commencement of his complaint.

I made an issue at each side of the curvature in his spine, and put him upon the plan both as to

medicine and diet which is mentioned in case 12. In a fortnight, the tension of the belly was so far lessened, as to allow the enlarged liver to be distinctly perceived by the touch. His appearance and general health rapidly improved; and his spirits became so unbounded, that he could not be restrained from play, even by the pain of the two large issues I had made in his back. In three months, the ulcers of the wrist, arm and fingers were healed; his belly was reduced to a natural size; and his general health so much improved, that he did not appear the same individual. I deemed it prudent, however, to preserve the issues open, and to enjoin the use of his medicines some time longer.

Case 15.

Ann Carty, fourteen years of age, with a scrofulous ulcer immediately below the chin, and a clustre of knotted glands in its neighbourhood, was put upon the same plan of treatment on the first of October, and under its use she completely recovered in less than three months. The disease in this girl made its appearance about two years before her application to me, having been at that time about a year apprenticed to a mantua-maker, who confined her constantly within doors to needle-work.—I could not learn, with certainty, the state of her bowels either before or after the attack of the disease.

Case 16.

In the second chapter, I mentioned that the success of inspissated ox-bile and asafœtida, employed by Richter against acidity of the stomach, suggested to me the use of a similar combination in scrofula, and that I had substituted aloes for bile, not having had any of the latter prepared for use; but as this combination in a liquid state (the only form in which it could be given to children), would be so nauseous as to prevent their taking it, I only tried it in adult cases, in every one of which its use was attended with decided advantage.

The most remarkable instance of its efficacy was Edward M'Creigh, a pale, sallow man, twenty-three years of age, whose trade (that of a shoemaker) confined him to a sedentary life within doors. The disease was of five years continuance at the time he applied to me, which was in December, 1809. There was a chain of ulcers extending from one ear to the other, an ulcer over the right clavicle, and another below the axilla of the left side. There were, however, but little swelling and induration of the glands at any of those places.—His skin was dry; and he said that he never perspired during exercise like others. He complained of frequent pains in his belly, but said that he was in general regular in his bowels. His appetite was good, and his tongue clean and red, but there was a remarkable appearance on it of bright red spots, similar to what occurs in scarlatina.

Farinacious and animal food in moderate quantities, with daily active exercise, was recommended. He was directed to take two grains of calomel with ten of rhubarb every second night, and five grains of asafœtida with two of aloes three times a day.—These medicines produced three or four evacuations daily, but under their use the ulcers were completely healed in the very short period of three weeks. He continued to take the medicine in smaller doses to prevent the danger of relapse.

The succeeding cases are selected from the male and female asylums of the House of Industry of this city; an extensive institution, which, independent of the support it affords to the adult paupers of a large metropolis, constantly contains from five to six hundred children of every age from infancy to adolescence. Among these children scrofula prevailed in so great a degree in the summer of 1809, that the servants and inmates of the house very generally believed that the disease was contagious. But we shall find in the following circumstances respecting the air, exercise and diet of the children, sufficient reason to conclude that it was only endemic in the institution, in the same manner as scurvy is on board a ship, without the necessity of resorting either to contagion or hereditary taint in order to account for its prevalence.

The building itself is placed in an elevated healthy situation, but is too much crowded by the numbers admitted to allow the air of its wards to preserve its purity. This inconvenience, however,

will shortly be removed, as a capacious asylum for the children is at present erecting, with large play grounds for their accommodation. Considerable injury has arisen from the crowded state of the wards at present occupied by the children; but this is an inconvenience that must continue for some time without remedy. In one ward of moderate height, sixty feet by eighteen, are thirty-eight beds, each of which contains three children, the entire number amounting to upwards of a hundred.—The matron of the Female Asylum informed me, that there is no enduring the air of this apartment when the doors are first thrown open in the morning; and that it is in vain to raise any of the windows, as those children who happen to be inconvenienced by the cold close them as soon as they have an opportunity. The air they breathe in the day time is little better: many are confined to the apartments they sleep in, or crowded to the number of several hundreds in the school-room. They have but little opportunity for exercise in the open air, as they have no play ground except the common yard, which is occupied by the beggars and vagrants who are compelled into the house; and from whose society the matron of the Asylum very properly endeavours to separate the children entrusted to her care.

These circumstances sufficiently indicate in this institution the existence of two of the exciting causes of scrofula; namely, impurity of air, and want of exercise. A third, I conceive, is afforded in the diet of the children, which chiefly consists of

buttermilk and vegetable aliment.* The acescent tendency of this food has been already sufficiently enlarged upon; and it is scarcely necessary to repeat, that the worst description of aliment will be digested by the strong and laborious; while in the stomach of the weak and sedentary it will remain unassimilated, and consequently run into fermentable changes. These evils, however, must take place in an institution whose funds are limited, while the relief it extends is almost without bounds.

The children whose cases I am about to detail, unavoidably remained while under treatment exposed to the same impurity of air and want of exercise which produced the disease. Their clothing was also insufficient, during the severity of winter, to promote the action of the cutaneous vessels; and they were entirely without shoes or stockings, which must have been a great impediment to the improvement of their health, when it is considered how much digestion is repressed by want of heat in

* The following is the diet of the children of the Male and Female Asylums:—

Breakfast—A quart of stirabout and a pint of buttermilk; every day the same.

Dinner—Three days in the week six ounces of bread, and a quart of broth made of beef or beef's heads, oatmeal, leeks, celery, parsley, cabbage, &c. Two, or sometimes three days in the week, a quart of calecannon, made of cabbage or parsnips, with potatoes: the other days, three pounds and a half of potatoes with a pint of buttermilk.

Supper—Six ounces of bread with buttermilk.

This quantity of food seems also to be too great, and evidently beyond the powers of digestion of most children.

the extremities. Their diet, however, was amended by the addition of half a pound of boiled beef every second day, and a quart of boiled sweet milk every day in place of the buttermilk.

Notwithstanding the inconveniencies mentioned above, and the often-detected neglect of nurses in administering the medicines, the amendment that took place under their use was obvious and often surprisingly rapid. In the greater number of cases, cures were obtained in a very few months; in the remainder, great amendment was observable; and there was not one instance, in which the plan was adopted, of the disease afterwards making progress. However, the amendment among the children in this institution, was not so rapid or remarkable as that which took place in the cases already detailed: a circumstance which can only be attributed to the continued operation of the exciting causes I have mentioned.

In all the following cases, except it is specified to the contrary, the plan of treatment was commenced on the 24th of June, 1809.

Case 17.

Mary M'Cabe, ætat. 11, was affected with scrofulous enlargement of the elbow joint, attended with ulceration, and a discharge of thin matter which came from several openings. The disease had been of upwards of two years continuance; but under the treatment recommended, the ulcers healed, and

the enlargement of the joint was reduced before October: however, the joint remains in a state of semiflexion, and retains but a very limited degree of motion. This girl, from being of a sickly emaciated appearance, has become healthy and robust.

Case 18.

Mary Ann Dunlary, ætat. 11, of a delicate appearance, was affected with swelling and ulceration of the glands under the right ear, and a large ulcer over the clavicle. These symptoms had appeared eighteen months before. In four months from the commencement of the plan of treatment, the ulcers were perfectly healed, and the swellings almost dispersed. She is also become a strong healthy looking girl.

Case 19.

Margaret Doolan, ætat. 8, was affected with an enlargement of the elbow joint, and a large ulcer on its upper part. This child was so greatly emaciated by continued diarrhæa, that she had been a long time confined to her bed. In fact, she was so much worn down by the disease that I did not conceive she could live a week, nor entertain a hope that her recovery was in the power of medicine.—Her arm, above the enlarged joint, was dwindled to the mere skin and bone; and she exhibited most of the other symptoms I have so often described. The same plan of medicine was entered upon with-

out any variation, and with the happiest effects:—the diarrhæa was soon checked, and in a month she was able to leave her bed. She quickly recovered her flesh, and is become a strong healthy child, with a ruddy complexion. The enlargement of the joint is reduced; but the ulcer, though nearly closed, still continues to discharge a small quantity of matter.

Case 20.

Ann Murphy, ætat. 12, had been four years affected by the disease. There were ulcers upon both cheeks over the parotid glands, and also enlargement and ulceration of the glands on each side of the neck. This girl recovered completely before November, but remains greatly marked by the disease.

Case 21.

Margaret Foy, ætat. 10. The glands below the under jaw were swelled and discoloured, as if threatening ulceration. While under treatment, the tumour broke, but healed before the October following; and the induration dispersed.

Case 22.

Bridget Dunn, ætat. 11, was affected upwards of two years with swelling of the right parotid, and of the glands below the ear on the left side. These

symptoms disappeared by the same means before the November following.

CASE 23.

Catharine Doyle, ætat. 13, was affected with swelling and ulceration of the glands on the right side of the neck, which began two years before; but were all healed or dispersed after a perseverance of four months in the plan recommended.

CASE 24.

Jane Lynch, ætat. 6. The glands below the chin were enlarged and indurated. In two months, there was scarcely a vestige of the disease.

CASE 25.

J. Drogheda, ætat. 3. The parotid glands of both sides were swelled, and all those below the under jaw indurated and covered by several deep ulcerations, which extended from one ear to the other, and downwards as low as the sternum.—There was also a large curvature of the dorsal vertebræ. His belly was so remarkably tumid and hard, that it felt as if distended by a substance as solid as cartilage. The disease had committed all these ravages in the course of five months; before which time, he was a remarkably fine healthy child.—From the time he began to take the medicines, an immediate state of improvement was perceptible:

it first shewed itself in the countenance of the child; he lost the peevish look which is so expressive of pain and ill health in children, his belly became softer, and as it diminished in bulk he seemed to acquire health and spirits. The ulcers began to heal, and in about five months were cicatriced.—The indurations are not yet quite dissipated, but their dissolution is gradually taking place, and he is again become a strong healthy child.

Case 26.

Ann Donohoe, ætat. 7, affected with psoropthalmia and swelling, and ulceration of the left parotid gland, recovered in three months.

Case 27.

Sarah M'Farlan, ætat. 9. The glands below the chin were indurated and enlarged. Under treatment they remained stationary for some months, but at length disappeared.

I might detail many other instances from the Female Asylum, almost equally demonstrative of the efficacy of the treatment recommended; but as the patients were not perfectly recovered at the time this work was going to press, I forbear introducing their cases. However, it is remarkable that the amendment was by no means so rapid, or the recoveries so numerous, among the children of the Female Asylum as in those who either did not be-

long to the institution, or were inmates of the Male Asylum. In the latter, there were eight boys affected by scrofula, all of whom, without any instance to the contrary, perfectly recovered in three or four months; while not more than one half of those belonging to the Female Asylum recovered in double that time. This remarkable difference, where the diet was alike, I conceive to be owing to the following circumstances. First—the very crowded state of the Female Asylum, while the Male Asylum was not over-crowded: secondly—the inactivity and confinement of the girls within doors, while the boys were allowed to exercise frequently in the open air: and, lastly—it happened that the woman who had the care of the boys was remarkably attentive in administering the medicines as directed, while the nurses in the Female Asylum were exceedingly negligent in that particular. Had all the children who were affected been collected together in one ward, and placed under careful attendants, there can be no doubt of the result: but by this unintentional but perhaps unavoidable experiment, not only my opinions respecting the causes of the disease, but the plan of cure I have laid down, were brought to the test; and the encouragement of those causes, in combination with a neglect of the proper remedies, at one side of the house, and the reverse of this conduct at the other, equally established, in their opposite consequences, the truth of the opinions, and the efficacy of the treatment.

Case 28.

William Jameson, ætat. 12. The glands of the left side of the neck swelled and badly ulcerated upwards of two years. The ulcers were all healed and swelling dissipated in four months.

Case 29.

William M'Nally, ætat. 12, had been seven years affected with the scrofula. The glands beneath the chin indurated and enlarged, there was an ulcer over the sternum, and the cicatrix of one on the cheek. The ulcer on his breast healed in two months, and the indurations were dispersed in four.

Case 30.

William Smith, ætat. 8, diseased six years, had swelling and ulceration of the glands beneath the lower jaw, and an ulcer on one cheek. In November, the ulcers were all healed, and the swellings dispersed.

Case 31.

Patrick Allen, aged 13, diseased upwards of two years with large prominent swellings of the glands below the under jaw, and several extensive ulcers. In the September following, all the ulcers healed:

some induration still remains, it is, however, scarcely perceptible.

Case 32.

John Lynch, ætat. 13. Four years diseased; all the glands below the under jaw indurated and covered by ulcerations. The ulcers healed in August, and the indurations dispersed before December.

Case 33.

John Ryan, ætat. 9. Swellings and induration of the glands under the jaw at both sides. In October were scarcely perceptible.

Case 34.

Patrick Lemon, ætat. 9. A deep ulcer in the right groin, and another lower down the thigh.—In August those ulcers were perfectly healed.

Case 35.

Andrew Henright, ætat. 8, was brought to me on account of the tumid state of his belly, the distention of which was increased every evening even to a degree sufficient to impede respiration. His fœces were of a green colour, and he passed his urine every night involuntarily. The increase of swel-

ling of his belly in the evening, I conceive, evidently arose from indigestion of his aliment, which, falling into the acetous fermentation, swelled the intestinal canal by the extrication of air. But I discovered that the glands below the left ear were indurated; a circumstance that escaped the attention of both patient and nurse, but which my increasing knowledge of the subject led me to suspect. He was treated in the same manner as the other children, and the same rapid amendment followed.

In the dry nursery of this institution, which contains children from one to five years of age, I also discovered many instances of induration and enlargement of the glands about the neck, which had before escaped observation. Whenever there was an extraordinary tumid appearance of the belly, and a pale peevish bloated countenance, indicative of general ill health, and disorder of the bowels, I was seldom disappointed in finding on examination an indurated state of some of the glands of the neck. These symptoms however soon yielded, when early combated, by the plan of treatment recommended; but, in the House of Industry, scrofula, as well as destructive bowel disorders, have greatly diminished in frequency within the last three months, since rice has been substituted in the dry-nursery in place of calecannon: a circumstance which still farther corroborates the conclusions I have drawn respecting the origin of scrofula.

A detail of cases so similar must be esteemed tedious, and perhaps unnecessary, as the simple

statement of the effects of the treatment in those cases would have been sufficient. But I preferred being thought diffuse, rather than the public should want any satisfaction those particulars may afford: and as the relation of cases treated in a public institution are open to the inspection and enquiries of every one, it puts at defiance any imputation of partial or exaggerated statement.

Independent of the benefits derived from a knowledge of the causes of scrofula, by its suggestion of an efficaceous mode of treatment, still greater advantages are manifested by its affording the means of prevention. So confident am I of this circumstance, that I conceive if the attentions prescribed relative to nursing, diet, exercise, air, and general treatment of children were duly observed, scrofula would never make its appearance, except in those infants who come into the world with frames so weak, and bodily powers so defective, that their organs are incapable of exercising the functions for which they have been provided. In such children a strong pre-disposition to the disease is coeval with their existence, because the functions of the skin, kidneys, liver, and other organs necessary for the preservation of health are imperfectly performed.—But even in those instances, the attentions recommended may invigorate the frame, and prevent the appearance of the disease; and, on the contrary, I am equally confident that scrofula may be produced in the most healthy child—the offspring of the most healthy parents, by exposing it to the combined influence of cold moist air, a sedentary in-

active state of life, and the use of vegetable or acescent aliment in such quantities as are beyond its digestive powers.

Since then we find the exciting causes of scrofula to be so various, it is no wonder that it should be generally disseminated, particularly in a country where the very climate predisposes to its attacks.—There is scarcely a family which has not had some individual affected by this malady; and hence the universally received opinion of its hereditary nature receives confirmation: for if the disease cannot be traced immediately to the parents or grand-parents of the child affected, it is easy to discover it in a more distant relative, which will be received as evidence of its descending from their common ancestor. I have witnessed, and so I will venture to say has every practitioner, instances of the healthiest parents having children with scrofula; and, on the contrary, parents who have had the disease, and yet gave birth to the most healthy children. It must be acknowledged, however, that there are instances of the prevalence of this disease in particular families; but when this is the case, it is most probable, that instead of an hereditary taint, either a languid inert fibre predisposes to its attacks, or the same bad mode of rearing children (such as abandoning them to the negligence of hireling nurses), has been transmitted from one mother to another, and produces similar effects whenever it occurs.

Comparative pathology, it is allowed, is as capable of elucidating the nature of human diseases, as comparative anatomy is of explaining the functions of

the human organs. With respect to the disease in question, we know that swine are so subject to one very similar, that scrofula has in consequence derived its name from those animals—and certainly their extraordinary fondness for acescent food corroborates in some degree the foregoing opinions.—Swine, it is well known, fatten upon buttermilk, and upon the sour liquid formed in starch manufactories during the steeping of wheat, which is extremely acid, from the large portion of vinegar it contains. The quantity of trash also with which they fill their stomachs when they have an opportunity is beyond their powers of digestion, and consequently falls into the acetous fermentation. I had an opportunity of ascertaining this circumstance by attending to the slaughtering of these animals; for whenever I found their stomachs filled with seemingly indigestible substances, which was in general the case, the fluid matter they contained reddened vegetable blues, and on examining its nature more narrowly it was found to contain vinegar. These facts I conceive are by no means unimportant in elucidating the nature of scrofula, when it is recollected that swine are subject to a glandular disease to which it bears a close resemblance.

If from the facts contained in this treatise, and the conclusions they afford, it is allowed that scrofula arises from the acetous fermentation of the aliment taken into the body, and a diminution or suppression of those secretions which should carry off the superabundant acids which are truly the exhausted materials of the frame, it is evident that

these two causes must produce one common effect—an accumulation of acid within the body. It would lead to idle speculations to conjecture in what manner this produces the phenomena of scrofula; but we may readily conceive, that a principle which has the power of thickening the fluids, and of dissolving the osseous matter, would be capable of *affecting the glands by induration, and the bones by caries*, although it is impossible from the intricacy of the functions of animals to demonstrate the manner in which it effects these ends: for acids may exist in excess in the blood combined with the other principles of that fluid, in such a manner as not to be discoverable by chemical tests, although constantly separated from it in an obvious form by the different secerning vessels, in the same manner as the saccharine matter in diabetic persons is separated by the kidneys in great quantities from the blood, although it was before scarcely or not at all perceptible in its state of combination with that fluid.

The advantages derived from alkaline medicines, and animal food in scrofula, also justify the opinion that it arises from an excess of acid in the body, as forcibly as the use of acids and vegetables demonstrate that scurvy is owing to an alkalescent or deoxygenated state of the system.

The effects of impeded perspiration, or of the generation of acid in the primæ viæ, we may conclude will be more severely felt in infancy than in advanced life, because the system is then charged to its fullest extent with oxygen, and there is naturally a quicker expenditure or change of the materials of

which the body is composed. The consumption of the acidifying principle seems necessary for the rapid growth of the body, as it produces those combinations upon which depend the formation of the solids out of the fluids, owing to the property which oxygen possesses of concreting the albumen—a principle contained in the serum of blood, and which enters the more largely into the composition of the body the younger the animal. But as the growth of the frame becomes progressively slower as it advances to its full size, the disposition to acescency naturally diminishes; and hence scrofula spontaneously disappears as the body approaches its full dimensions, after which it is seldom known to make its appearance. During the period of maturity the opposite principles of the frame seem to be at an equilibrium, but as age advances the earths and alkalies begin to preponderate, until at length the former enters even largely into the structure of muscle; the motion of the heart and arteries becomes in consequence impeded, and thus the body naturally tends to degeneracy and decay.*

I have entered into this short view of the proportion of some of the component principles of the

* In advanced age, when the body is imperceptibly tending to dissolution, the absorption of oxygen by the skin and lungs is incomparably less than when it is advancing to maturity: for which reason the diet should be such as would be most likely to supply in some measure the deficiency of oxygen. This end will be best answered by a vegetable diet, abundance of ripe fruit, and a moderate quantity of wine. Doctor Rollo has recommended a similar regimen for persons in advanced age.

body at different periods of life, in order to show that the same causes cannot be expected to produce the same effects in infancy as in advanced life; and to explain why acescent diet, or the accession of the acetous fermentation in the primæ viæ, may not produce scrofula in manhood, though it will have that effect during childhood. In manhood, however, there seems to be many diseases depending upon excess of acid in the system, and among the number there are strong reasons for including gout and the most common species of urinary calculus. The same circumstances seem to produce the two diseases, and the same person is frequently subject to both gout and gravel. The urinary calculi alluded to are composed of an acid united with animal matter, and the concretions which form about the joints of gouty people are composed of the same acid and animal matter, with the addition of soda—a principle that is probably afforded by the synovia, which contains that alkali in excess: so that there are some grounds to believe that both diseases spring from a common cause. Fermented liquors are very generally supposed to give birth to gout. Doctor Darwin remarks, that he never knew any one affected with this disorder who had not drank freely of fermented liquors; and Doctor Egan, in his ingenious and excellent "Memoir on Calculi," inserted in the transactions of the Royal Irish Academy, attributes the frequency of stone in the bladder among the natives of France, to the poor acid kind of wine which is the constant drink of the peasantry of that country. He also observes,

that a great proportion of those operated upon in the London hospitals come from the cider counties of Hereford and Devon; and that the general use of fermented liquors of every kind renders the disease of more frequent occurrence in England than in Ireland. The identity of the origin of gout and calculi composed of uric acid, is also strongly confirmed by the benefit that is derived in both distempers by the use of alkalies, and abstinence from fermented liquors and acescent diet.

It is remarked by Stoll, that the children of gouty persons are very subject to scrofula*; and certainly there is a peculiar temperament that seems to be disposed to this disease, which is marked by an unusually florid complexion and phlegmatic bloated countenance, very different from that of the sanguine temperament, and which bears a strong resemblance to that of most gouty persons. And it is universally acknowledged, that a similarity of organization, transmitted by the father to the son, causes a pre-disposition to the same diseases, without at all communicating any hereditary taint; and from the observation of Stoll, and the similarity of complexion alluded to, there appear some grounds for the supposition that gout and scrofula have a similar origin, but take their peculiar characters from the difference of the component principles of the frame at different periods of life. With children of florid complexions affected by scrofula, I have found that the preparations of iron proved in

* Stoll ratio Medendi, VII, 155.

every instance injurious, while they were rather beneficial with those of a pale leucophlegmatic appearance: and the same observation was also made by other practitioners with whom I conversed on the subject. May not, therefore, an excess of iron in the blood, which is indicated by an unusually florid complexion, pre-dispose to scrofula, by inducing too high a degree of oxygenation of the system*? and are not the scrofulous swellings of the glands, which sometimes follow the use of mercury, owing also to the hyper-oxygenation of the system from the oxides of that metal? for it is by the disengagement of the acidifying principle that mercury is supposed to produce its effects upon the frame: therefore, probably, we find that though this mineral is useful in scrofula, when given in small doses sufficient to excite the action of the liver, and thus produce a healthful secretion of bile, yet it is always found injurious when exhibited as extensively as to affect the general system.

Many imagine that scrofula and cancer are nearly allied, and certainly instances are not wanting in which the one has been mistaken for the other.—But no two diseases can be more essentially different; for the time of life disposed to scrofula is childhood, while the period most liable to cancer is in advanced age, when the body first begins to decline.

* See Uses of Iron in the Blood in my "Treatise upon Cancer."

The parts affected by scrofula are the absorbent glands and bones; those most liable to cancer are all the secerning glands, except the liver; while the bones never become cancerous, but are often injured by the proximity of the disease. The exciting causes are dissimilar: for scrofula is never produced by external accident, as is frequently the case with cancer; and the structure of the diseased parts are also essentially different, as has been sufficiently demonstated in my treatise on that disease.

A remarkable connexion has been observed to exist between scrofula and rickets: to me it appears that they are but modifications of the same disease, arising from the same identical cause. But rickets occur at a more early period of life than scrofula, and appears the maximum of the disease; for we find the entire of the bones become softened, which is most probably owing to the strong disposition to acescency, which is so much greater in early infancy than at any other period of life. We also find that almost all the symptoms of scrofula are present in rickets, *viz.* the tumid belly, swelled upper lip, bloated appearance of the countenance, enlargement of the extremities of the bones forming the joints, flacidity of the muscles and enlargement of the mesenteric glands; nay, we even find that the symptoms of rickets are constantly followed by swelling and ulceration of the lymphatic glands of the neck, and other unequivocal signs of scrofula—a circumstance which has been observed by almost every writer. Cullen observes, that "Scro-

fula is sometimes joined with or follows rickets; and although it frequently appears in children who have not had rickets in any great degree, yet it often attacks those who by a protuberant forehead, by tumid joints, and a tumid abdomen, evince that they had some rachetic disposition."

Since then so many facts lead to the conclusion that rickets and scrofula spring from one common origin, I feel myself considerably strengthened in my opinions respecting the proximate cause of scrofula, by finding that rickets have been attributed by several medical philosophers to acids generated in the primæ viæ of infants. Bonhomme, in his memoir on the nature and treatment of rachitis, asserts, that the disorder arises from the developement of an acid, approaching in its properties to the vegetable acids, particularly the oxalic. Mr. John Veirac, surgeon at Rotterdam, in his treatise on rickets, which obtained a premium from the Society of Arts and Sciences at Utrecht, asserts that the acidity of the milk in the stomach is incorporated with the mass of blood, and insinuates itself into the very substance of the bones. We are informed by him that the blood in those cases effervesces with aqua ammoniæ. The cure he recommends corresponds with his principles, and consists in the exhibition of alkaline medicines. From the doctrine I have ventured to lay down respecting the proximate cause of scrofula and rickets, it will be seen that Mr. Veirac's opinion nearly corresponds with mine, respecting the origin of the latter di-

sease; but from the facts I have detailed they apply equally to both diseases. The disposition, however, to the generation of acids in the stomach, cannot be attributed as he supposes to the qualities of the human milk, which of all animal fluids we have seen is least prone to any spontaneous change.

Wiseman, in whose time every disease was accounted for on the hypothesis of acids, alkalies, effervescences, and sharp humours in the blood, falls upon the theory of a peculiar acidity of the serum being the cause of scrofula: "Which whenever it lights," says he, "upon a glandule muscle, or membrane, it coagulates and hardens, when it mixeth with marrow, always dissolves it, and rotteth the bone.*" But Wiseman does not adduce any grounds for this opinion, nor indeed could he supply any rational ones at a period when scarcely any thing was known of the constituent principles of animals; therefore, though we must look upon his hypothesis as a mere conjecture, it led to a judicious mode of treatment, and the use of several remedies which appear to have been eminently successful in his hands, notwithstanding the wild farrago of ingredients which entered into his prescriptions.

There are some, perhaps, who will be inclined to impute to me the folly of reviving the ridiculous theory of acids and alkalies, with their concomitant fermentations and effervescences, which brought

* Wiseman's Surgery, Page 248.

disgrace upon medicine in the sixteenth and seventeenth centuries: but nothing is farther from my thoughts, or more contradictory to the principles I would inculcate. The physicians of that day ascribed not only every disorder to the excess of acid or alkaline humours, but explained the very functions of animals by their mixture or contention. A single truth has often given rise to a multitude of errors; and seldom has an error been universal that was not founded in some degree of truth. But it is a malady of the human mind, on making an important discovery, not to value it according to its true relations, but to force every thing in nature, however adverse, into affinity with it; and to fabricate a towering system upon it, that tumbles at the first touch of inquiry, while the foundation, that is alone of value, is lost in the ruins. Science has at length adopted the true mode of investigation; and reasoning on physical subjects is exploded, if not supported by facts. If, in pursuance of this principle, I have observed the rule I laid down to myself, I have advanced no argument originating in supposition or conjecture, but in facts ascertained by chemical experiment or medical practice.

From those I have considered, we learn that scrofula is not owing to any occult acrimony so subtle as to pass from grandfather to grandson, without affecting the intermediate generation: but we find that the period of childhood is pre-disposed to its attacks, and that acescent diet, impure air,

and deficient exercise, particularly in weakly children, are sufficient to produce the disease without the agency of any virus unaccountably lurking in the system, and capriciously making its appearance in the almost miraculous manner hitherto supposed, eluding every conjecture, and resisting every remedy.

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