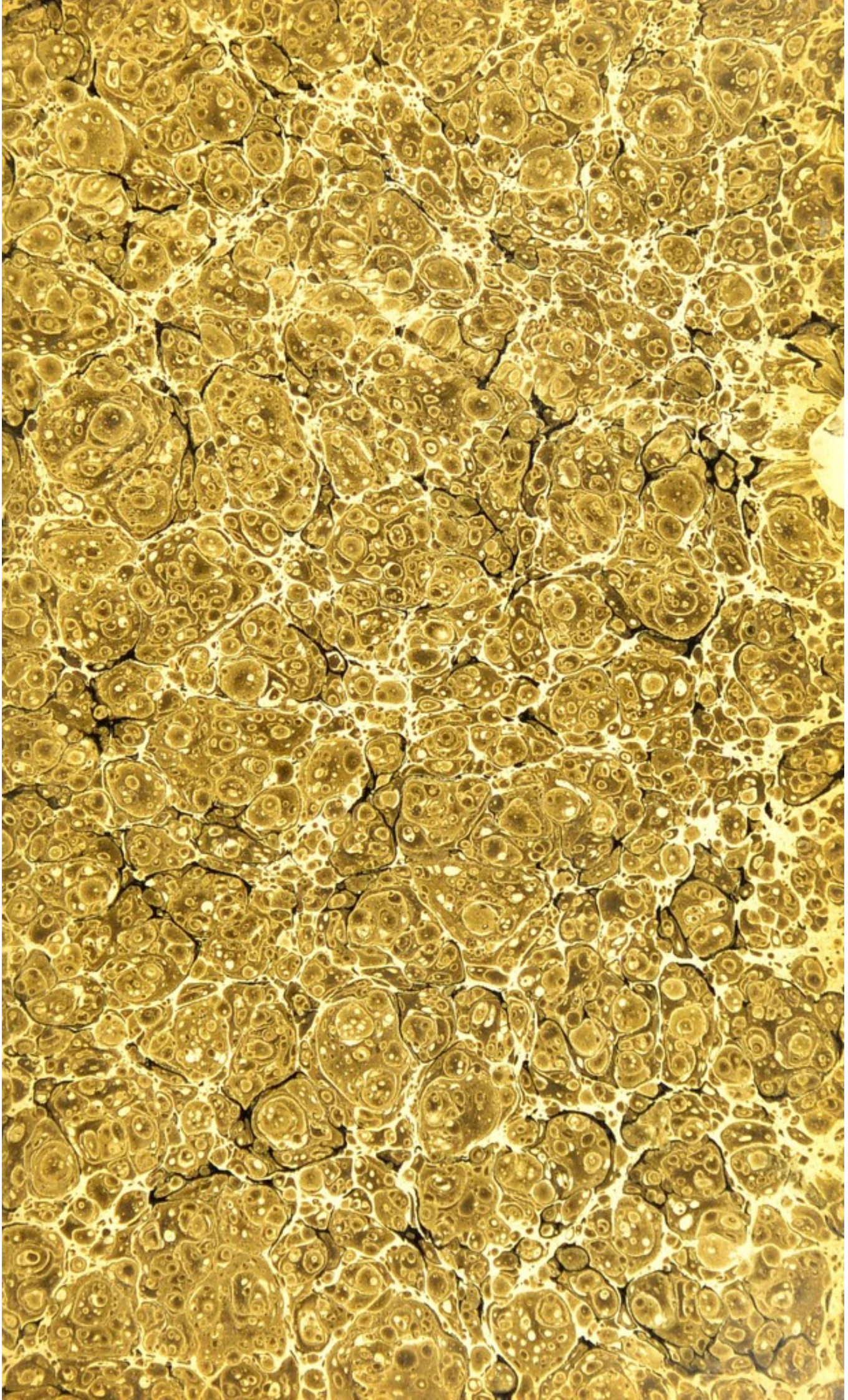
A new view of the infection of scarlet fever, illustrated by remarks on other contagious disorders / By William Macmichael.



NEW VIEW

OF THE

INFECTION

OF

SCARLET FEVER,

ILLUSTRATED BY

REMARKS

ON OTHER

CONTAGIOUS DISORDERS.

BY WILLIAM MACMICHAEL, M.D. F.R.S.

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TO

SIR HENRY HALFORD, BART. M.D. F.R.S.

PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS
AND PHYSICIAN TO THE KING.

DEAR SIR,

I have ventured, in the following pages, to advance some opinions of rather a novel nature, which will probably be open to many objections; and I am fully conscious how unworthy they are of the sanction of a name which stands deservedly at the head of the medical profession; but I feel proud of the opportunity they afford me of declaring publicly how

greatly obliged I feel to you for the constant and uniform kindness you have shown me, and how truly

I am,

Dear Sir,

Your most sincere friend and

faithful servant,

WILLIAM MACMICHAEL.

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CHAPTER I.

Improved Value of Life—Increase and Decrease of certain Diseases—Causes of Epidemic Diseases—Pellagra—Ergot—Malaria.

One of the most striking observations to which public attention has recently been directed, is, that the rate of mortality in England has decreased nearly one-third within the last forty years. In 1780 it was calculated, that one person in forty died every year; whereas it appears, from the

very valuable statistical work *, lately published by order of the House of Commons, that in 1820 the annual mortality was only one in fifty-eight.

This increase in the duration of human life is attributable to various causes, among which the most prominent are, the better food and clothing of the poorer classes, the more temperate habits that prevail pretty generally throughout all orders of society, the entire disappearance or mitigated severity of many fatal diseases, the substitution of vaccination for the small-pox, and the improved state of the practice of physic.

It is obvious that whatever effect the last-mentioned cause has produced, will be visible chiefly in the better treatment of those

* Population and Parish Registry Returns for 1821.

diseases which have been called epidemic, and which attack great numbers of persons at one and the same time. It must be confessed, however, that without any apparent satisfactory reason, some maladies have become less common now than formerly, of which rickets and scrofula are the most remarkable; on the other hand, gout, consumption, palsy, and lunacy have increased in fatality. Sudden elevations and depressions of fortune, with the corresponding anxiety and eagerness consequent on an excessive spirit of mercantile speculation, may explain the greater frequency of mental diseases; while sedentary trades and professions, nay, even temporary fashions and customs in dress, must necessarily affect the habits and character of the constitution.

The indulgences and vices of civilised life naturally account for the greater preva-

lence of the gout: as to palsy, its increase may probably be fairly enough attributed to the less general use of blood-letting, a practice that was formerly much more commonly employed than it is at present. Twice a year, at what was called the spring and fall, persons of a certain period of life were in the habit of losing blood; and even for the slightest ailment, as a pain in the finger, without any reference to a threatened fit of apoplexy, bleeding was resorted to.

The obvious causes of all those disorders affecting great numbers of persons at the same time, are bad or deficient diet, noxious exhalations of the earth, contagion, and the general influence of climate, or change of seasons. Any controlling power which we may be able to exercise over these causes, will ameliorate the condition of society, and

necessarily increase the value of life. Improvements in agriculture, by furnishing a greater abundance of the necessaries of life, counteract the first of these causes. The enforcement of a strict quarantine* has entirely succeeded in banishing one of the most formidable of the contagious diseases, viz. the plague; and the *universal* practice of vaccination would as certainly completely

* That we can rely on nothing but the strictest quarantine for our exemption from the plague, is proved by the appearance of that calamity in the island of Malta, in the year 1813, when it was imported from Alexandria. The improvements of modern civilised society are at Malta in their full force, it is in the possession of one of the most polished nations of the world; but all these advantages were insufficient to prevent the fatal and wide-spreading ravages of the plague, when once introduced into the island.

exterminate the small-pox. For it has been well observed, with respect to inoculation for the latter disease, that the partial benefit derived by those who undergo the operation has been overbalanced by its favouring the casual propagation of small-pox—an objection that cannot be made to vaccination.

Of the value of this discovery we may form an opinion from the following statements:—In 1818 only 421 persons died of the small-pox in London, which is the lowest number that has ever occurred since the bills of mortality were kept; but the practice of vaccination is still by no means universally adopted, and the report of the National Vaccine Establishment of 1821 begins by regretting, "that the small-pox has occasioned the loss of many lives in various parts of the United Kingdom since our last report, and that not less than 792

persons have died of that distemper within the bills of mortality, in the course of last year. This is about one-third of the average number of those who perished annually in the metropolis before the introduction of vaccination; but so many deaths afford a strong presumptive proof that great prejudices still prevail against vaccination, and that the benevolent designs of the government are still far from being accomplished."

The report of 1822 mentions, that 508 persons had died of small-pox within the bills; a diminution that may justly be attributed to the wider diffusion of vaccination. That the pretensions of this discovery were originally rated somewhat too high, and that in some few instances small-pox does occur in a peculiarly mild and modified form, after the patient has undergone genuine and well characterised cow-pox, is

admitted now by every one: but that deep-rooted prejudices should still exist against the universal employment of vaccination, cannot but excite surprise; especially, as is most ably urged in the candid report above alluded to*, "we learn, from ample experience, that the number of cases of small-pox in the safe form, which it is found to assume after vaccination, is by no means equal to the number of deaths by inoculation."

If it be impossible to get rid of the other contagious diseases, still much good has been effected, by disarming them of their violence. Ventilation, the free use of external cold, and the bold administration of

* Report to the Secretary of State for the Home Department from the National Vaccine Establishment, dated 31st January, 1822.

purgatives, have contributed much to lessen the severity of typhus, the measles, and scarlet fever.

In so mild a climate as England any very great influence cannot be attributed to the seasons. In the winter, pulmonary complaints and dropsies are the most fatal; in the spring, inflammatory diseases; and in the autumn, bowel complaints predominate. The latter, indeed, are diseases more obviously connected with the influence of climate than any others. Dysentery has, however, gradually declined; the number of deaths, recorded in the bills of mortality, under the heads of bloody-flux, colic, and gripes, being at the beginning of the 18th century about 1070 annually; but at the close of the same century they amounted to only 20. This alteration in the health of the people of England (for it is not confined

to the metropolis) Dr. Heberden* ascribes to the improvements which have gradually taken place, not only in London, but in all great towns, and in the manner of living throughout the kingdom, particularly with respect to cleanliness and ventilation.

Among the causes of epidemic, or rather what would be called more technically endemic, diseases, I have enumerated bad diet, in proof of which the *Pellagra* of Lombardy, and the disorder called by the French *Ergot*, may be cited as affording striking illustrations of the baneful consequences of unwholesome or scanty nourishment.

* Observations on the Increase and Decrease of different Diseases, by W. Heberden, jun. M. D. &c.—London, 1801.

PELLAGRA.

This is a disease which is described as prevailing in the provinces of Italy, that lie between the Alps and the Po, and which has made its appearance chiefly within the last fifty years. It is a cutaneous disorder, confined to the peasants employed in the cultivation of the soil, the principal objects of which, in these plains, are, besides the vineyards, maize, rice, and millet. In the early stage of the complaint, red spots, with slight elevations of the cuticle, resembling lepra, are observable; the skin becomes dry and scaly; vague and irregular pains are felt; and in its inveterate form, the disease assumes an appearance not unlike Icthyosis. The malady then abates; but as the summer of the following year approaches, it recurs with increased violence; spasms, anxiety,

depression of spirits, cachexy, idiotcy, and mania are the last symptoms. Dr. Holland* (from whom I have borrowed the description of this disease) states, that in the lunatic hospital at Milan, of 500 patients, more than one-third were *Pellagrosi.*

The disease is not contagious, but it has an affinity both to leprosy and scurvy, and has been called by some Scorbutus Alpinus. The peasants of Lombardy, notwithstanding the great fertility of these provinces, live in extreme misery: they have little animal food; the quantity and quality of their diet are very bad; their bread, which is principally made of maize, is ill fermented and deficient in salt. The squalid wretchedness, in short, in which they live, which is

* Medico Chirurgical Transactions, vol. viii. part 2.

the result of war, want of commerce, heavy taxation, and every sort of privation, is assigned, with all appearance of probability, as the cause of that cachectic state of body, which manifests itself in the cutaneous eruption, the muscular debility, and the general affection of the nervous system, that form the chief symptoms of this deplorable malady. It has indeed been attributed, by some Italian physicians, to the increasing use of maize; by others, to that of rice, as articles of food; but both these causes seem inadequate and fanciful. The cure consists in generous diet, wine, tonics, and the warm bath.

ERGOT.

Rye is subject to a disease called *ergot*; in English, horned rye. Bread made of it

has a nauseous, acid taste, and was thought to be the cause of a spasmodic and gangrenous disorder. This epidemic, which obtained, also, the name of *Ignis sacer*, *Feu St. Antoine*, and raged in Sologne about the year 1650, was probably, however, the result of starvation, or deficient nourishment, rather than of the use of diseased corn. According to the description of this disease, it commenced with lassitude and debility, followed by torpor, swelling, and a sense of burning heat, and excruciating pains in the lower limbs, which then became shrivelled and dark, and at length gangrenous, and dropped off. The malady afflicted almost exclusively the lowest classes of the people, who, in order to avoid actual famine, were compelled to live on a sort of bread, made of the meal of acorns, of grape stones, of the roots of fern, and of other crude and unnutritious substances. Another disorder,

which is said to have begun with an intense heat, accompanied with a sense of the creeping of insects over the skin, and followed by acute pains of the limbs and general convulsions of the muscles, by which the patient was often carried off, was ascribed to the *ergot* in rye, or to the mixture of other unwholesome plants with the food. The disease of the rye occurs when a very hot summer succeeds a rainy spring.

MALARIA.

The next general cause of disease which I shall notice, is what the Italians call malaria, known amongst ourselves by the term marsh miasma. This is a name, however, which conveys an erroneous idea; for there are many marshy districts where ague is unknown, and others, again, where inter-

mittents abound, though the soil is dry and the ground elevated*.

* In the year 1812, I was detained several days at Trichiri, a small seaport at the mouth of the Gulf of Volo, in Thessaly. The town is built on a dry limestone rock, but it is notorious for malaria. During my stay here, I made an excursion to visit the celebrated pass of Thermopylæ, and slept one night near the marshy district in that neighbourhood. On my return, the friends whom I had been waiting for arrived from Athens, and we all embarked on board a Greek vessel, to cruise in the Archipelago. On the following day, I was seized with a most severe fit of ague; and, at the same time, a servant belonging to the party suffered a similar attack. It might be said, that I had caught my intermittent at Thermopylæ: but the servant had not quitted the dry rock of Trichiri, upon which he remained more than a week. My ague proved a severe tertian; and I did not entirely get rid of it till two years after I had quitted Greece.

The nature of this invisible material, called malaria, is quite unknown; produced, as it has been thought to be, from vegetating soils, under peculiar circumstances of heat and moisture, it has been variously pronounced to be azote, carbonic acid gas, hydrogen, carburetted hydrogen, and sulphuretted hydrogen. All these suppositions have been, in the end, proved to be false, and we remain still utterly ignorant of the essence of this pestilential substance.

The exciting cause of ague differs from the matter of contagion, inasmuch as it cannot be detained nor preserved in dead substances. To suffer from it, the human body must be exposed to its influence on the spot where it is produced. In England, the aguish counties are Kent, Essex, Cambridgeshire, and the East Riding of Yorkshire; but the country most re-

markable for the ravages of malaria, is that part of Italy called the Maremma, a district that stretches from Leghorn to Terracina. It is a tract of country near the sea, varying in breadth from thirty to forty miles, and being in length about one hundred and ninety-two geographical miles. The disease produced by the malaria of this territory is the true Walcheren fever; but it can by no means be said to be caused by marsh miasmata, as the greater number of places in which it exists are dry, airy, and elevated. Nor is the approach of the pestilence announced: the victim is warned by no visible sign of the presence of the destructive poison he is inhaling; for the tranquillity of the air and the freshness of the verdure around him, would lead him to suppose he was in the most healthy region. If the Pontine marshes are unhealthy from stagnant water, that is not the cause in the

greater part of the Maremma, in the Tuscan and the Roman territory for instance, where the soil is dry, and the ground, in many places, elevated above the plain. The basis of the soil of the Campagna di Roma, is a calcareous sand-stone, over which is a covering of volcanic origin; and here the unhealthy region extends from the foot of the mountains of Viterbo to the walls of the capital, within which the shepherds and their flocks come to take shelter at night. Nay, the city itself is not free from its attacks; and every year it reaches some part of Rome, where it was before unknown.

Many reasons have been assigned for this increase of malaria: the Italian writers assert, that since the plague of the sixteenth century, the population of the country has never been great enough to resist the influence of the bad air, which augments

every year, in proportion as the number of people and the labours of agriculture diminish. A dense population, and the peculiar state of the atmosphere produced by it, might retard its progress; and this supposition would seem to receive some support from the curious fact mentioned by the author of a very ingenious paper* on this subject—that sleeping under a mosquito-net, in an infected place, will preserve a person from the pernicious effects of the malaria. The explanation given of this singular protecting power is, that the heated and compound gas, coming from the lungs, and detained by the mechanical texture of the net, may decompose the miasma.

Much ingenious speculation has been

* Edinburgh Review, No. 72. art. 9. Dello Stato Fisico del Suolo di Roma, &c. Di G. Brocchi.

exercised upon the cause of the difference of salubrity of the country round Rome now and in ancient times; when, notwithstanding the city was beset by marshes, lakes, and woods, its population increased with great rapidity. It must be confessed, that no very satisfactory explanation has hitherto been advanced; for it will hardly be allowed, that the change of dress from the woollen clothing of ancient Rome to the use of the silk and linen of modern days, can be received as an adequate cause.

The population of Rome in 1791 was estimated at 166,000: it had decreased, in 1813, to 100,000: but the real nature of malaria, whether it is to be considered as the cause or the effect of this diminution, is not at all understood, and still presents one of the most curious problems to be found in the natural history of any country.

While on the subject of ague, I may observe, that the contradictory opinions which have been maintained on the infectious or non-infectious nature of what has been called yellow fever, may be reconciled by admitting that two distinct kinds of fever have received the same denomination. Dr. Lind, speaking of a yellow fever in the island of Jamaica, which was not contagious, and of one brought from our American colonies, that was highly infectious, observes: "We can only reconcile the facts that may be produced on both sides of the question, in support of those opposite opinions, by supposing, that the yellow fever, in the West Indies, is sometimes of a mild nature, and altogether free from infection, while, at other times, it is more violent, and highly infectious*." But, if we allow that the

* A Dissertation on Fevers and Infection, p. 293. By James Lind, M. D.

name of yellow fever has been indiscriminately applied to the worst form of ague, and to a fever which is infectious, and which is, in fact, typhus, accompanied by great derangement of the functions of the liver, all ambiguity will vanish.

CHAPTER II.

Contagion—Small-pox—Hydrophobia—Measles—Epidemic Constitution—Origin of the Infection of Typhus Fever—The Plague.

But the most fatal of all the causes, producing diseases that attack large classes of the community, is *contagion.* The chief diseases arising from this source are, the plague, typhus, small-pox, measles, and scarlet fever. How these several infections first originated is a different question, and foreign from the subject of my present inquiry. They seem to have existed anterior to any tradition or historical record—to have been perpetuated from age to age, and from year to year—to have been confined, in the first instance, to some remote district, and to have been gradually disseminated over

the greatest part of the world by war, conquests, political revolutions, commercial intercourse, or even by the accidental visits of travellers.

"Thus the small-pox," says Lind, "has been for some ages past, and continues still to be, the terror and destroyer of a great part of mankind. But from what origin, or how, was this infection first generated? Many opinions have been given on this matter, equally incapable of proof or refutation. And the original causes of this, as well as of several other contagions, continue still among the hidden secrets of nature, notwithstanding the many plausible conjectures concerning them. The real existence of an infection can only be ascertained by its visible effects; many of which are also inexplicable. Thus the Europeans have carried the small-pox to almost all parts of the

world, where their ships have opened a trade; though the seamen in those ships might not have been afflicted with it in that voyage. This venom has been conveyed, in an old blanket, to nations of Indians; some of whom it has almost extirpated."—P. 295*.

It is also more than probable that the poison of hydrophobia is spread only by communication from one rabid animal to another; for that it has no relation to the heat of the weather is clearly proved by its common appearance in Russia during the severest winters. Then it prevails amongst the wolves, who venture during that inclement season into the villages, and boldly attack the peasants. Many parts of the world are to this moment exempt from this

* A Dissertation on Fevers and Infection.

dreadful infection; and I believe it has not yet been known in the island of Jamaica, or at Cairo, in Egypt; and, if I am not mistaken, it has not appeared in India. If the opinion that this poison, like the other infections, is the result of an original unextinguished contagion, be correct, does it not point out a simple method of extinguishing it in this country, viz. by adopting measures similar to those of the strict quarantine, to which we are indebted for our present exemption from the horrors of the plague?

Of the class of contagious diseases, some may be considered, in the present state of society, as almost inevitable, though they generally affect the system only once in the course of a life, while others, as typhus fever for instance, may recur frequently, though they may be avoided altogether by only ordinary precaution.

One of the most remarkable of the contagious diseases, which persons undergo usually once only in their lives, is the small-pox; and we have seen that vaccination has disarmed it in a great measure of its alarming fatality, and might, indeed, by the universal employment of that great discovery, effect its complete extermination.

The small-pox occasionally recurs, but certainly such an accident is rare, and the assertion lately made in a treatise* on that subject, must surely be hasty and inaccurate. It is quite incredible that out of 836 cases of small-pox, which Dr. Thomson saw in

* Historical Sketch of the Opinions entertained by Medical Men respecting the Varieties and the Secondary Occurrence of Small-pox, &c. By John Thomson, M.D. p. 279.—London, 1822.

the interval from June, 1818, to the time of the publication of his work, in 1822, seventy-one should have previously passed through that disease. This proportion is more than one in twelve: if such indeed were the fact, we ought no longer to speak of secondary small-pox, as one of those anomalies observable in some peculiar constitutions, which baffle the skill of the most experienced physician.

The inoculation of the measles by Dr. Home of Edinburgh was an experiment, which, though practicable, was not attended with such advantage as to occasion its being continued. Much, however, has been done in mitigating the violence of this formidable disease, by improved medical treatment, and perhaps still more by the judicious application of a remark that could not escape the most careless observer, viz. that the

measles sometimes appear epidemically under a very mild form.

The disease occasionally occurs without any of the usual preparatory symptoms, and after so very little fever, that patients can hardly say they have been ill at all. Dr. Heberden observes, that the longer the preparatory symptoms, such as sickness, quickness of pulse, cough, sneezing, pains in the limbs, continue, and the worse they are, so much the less mild has the distemper proved.

Parents considering the measles as a disease almost inevitable, have wisely chosen to expose their children to the contagion, at such auspicious times; so that the disorder may be once well over, and all further anxiety at an end. It will be my present purpose to prove that the same practice

should be followed as to scarlet fever, a name that sounds so fearfully in the ears of mothers.

Why contagious diseases at one time assume a mild type, at another appear under an alarming aspect, is a question that may perhaps never admit of a very satisfactory reply; but it is our duty to note the fact, and to avail ourselves to the utmost of the advantage to be derived from a judicious application of so important a truth.

In the absence of all other explanation, it has generally been agreed to attribute this difference of type to some occult quality of the air; for we are not more advanced now in our knowledge of the subject, than they were in the days of Sydenham. The *constitutio aeris* is still appealed to as neces-

sary, if not to generate, at least to cause the universal diffusion of contagious fever. But if instead of employing so vague and unmeaning a term, we were content to speak of a *constitutio epidemica*, or that peculiar state or condition of body, into which a great number of people are brought by having been subjected to the operation of the same physical and moral causes, something more distinct and intelligible would be expressed.

These causes are very numerous, and various in their character; as previous hot, cold, or damp weather, deficient or bad diet, fatigue, grief, anxiety, &c. Being all similarly predisposed, it is not strange that if a number of people should fall into the same disease, they should have it in the same way, whether mild or severe, in other words, that an *epidemic constitution* should prevail.

When typhus fever is raging and committing great havock among the different classes of society, or the small-pox, measles, or scarlet fever, are very common, it is immediately assumed that there is a peculiar condition of the atmosphere favourable to the propagation of these several complaints. "It seems a well established fact," says Sir G. Blane*, "that the same morbid effluvia which produce typhus, give a susceptibility or predisposition to the attacks of other diseases." It might, perhaps, have been more correct to have said, that when the body has been debilitated by the long-continued action of the above-mentioned moral and physical causes, one or other of the conta-

* Observations on the comparative Prevalence, Mortality, and Treatment of different Diseases.—Medico-Chirurgical Transactions, vol. iv.

gious diseases predominates, as accident may determine.

I have stated that the *constitutio epidemica* is the result of the combined action of various causes, which, during their almost imperceptible and silent operation, may have excited little or no observation; hence we have been led to attribute the appearance and character of an epidemic to the agency of some mysterious power, an *arcana constitutio aeris.* Sydenham says, that the character of diseases is the result of what he called *constitutiones annorum,* which vary not according to the degree of heat, cold, moisture, or dryness, but depend upon some occult and inexplicable change in the very bowels of the earth*.

* Variæ sunt nempe annorum constitutiones, quæ neque calori, neque frigori, non sicco humidove ortum suum debent, sed ab occultâ potius

Certain phenomena were observed, and were referred to causes that were supposed to be still acting, whereas the type of diseases is modified by agencies that may have ceased to operate, having already produced their effect. An example of what I mean is furnished by the bowel complaints so prevalent in the months of September and October, which ought to be referred rather to the *previous* heat of summer, than to any indulgence in the fruits of autumn. In all hot countries these disorders are more common than they are with us, and here in England they are most severe after the hottest summers.

et inexplicabili quadam alteratione in ipsis terræ visceribus pendent, unde aer ejusmodi effluviis contaminatur, quæ humana corpora huic aut illi morbo addicunt determinantque, &c.—Sydenham, Opera Universa, p. 6.

It may not always be so easy to assign any one, or even any number of causes that shall decidedly appear to have produced, what I have called, the epidemic constitution; but though we should still be incredulous as to the theory, we ought not to reject the application of the remark: if it be really true that contagious diseases do sometimes appear under an universally mild form, we ought to profit by the observation, though unable satisfactorily to explain it.

TYPHUS FEVER.

The contagion of typhus fever is an invisible matter exhaling from the body of the patient, and radiating to the distance of two or three feet only, provided the noxious vapour be not accumulated in a room for want of ventilation. The poison adheres also to

the patient's wearing apparel and dirty linen, to materials of wool, cotton, linen, beams of wood, chairs, bedsteads, and other furniture; and also to various utensils used about the sick; and its virulence, so far from being impaired by this lurking condition, has been supposed to be more certain and concentrated than in the recently emitted effluvia or excretions of the sick.

According to Lind, neither wholesome air nor the severest frost appeared to mitigate the force of the contagion; but he gives a curious example of an unintentional fumigation that had the effect of entirely destroying it on board a ship. "The Edgar," says he, "sailed soon after for the Mediterranean, where the contagion in a few months acquiring great vigour, together with a superadded scurvy, destroyed sixty of her men. The manner in which the in-

fection was removed from the ship, though not unusual, is worth relating. In the engagement which happened that year with the French fleet on the coast of Portugal, twenty-five barrels of gunpowder were fired on board of her during the action; and to the surprise of the officers, none of her men were afterwards attacked with fevers*."

It has generally been maintained that foul air, filth, putrid animal effluvia, cold, wet, fatigue, or bad diet, will produce contagion where none previously existed; but the probability is, that though these several causes, acting for a long time, will predispose the body to yield to the influence of infection, they are not able to generate it; in short, that typhus fever does not now

* A Dissertation on Fevers and Infection, p. 191.

originate in any individual. I cannot better endeavour to establish the truth of this opinion, which will no doubt be questioned by many, than by giving a few instances of the first appearance of an infectious fever, mentioned by that intelligent physician Dr. Lind.

" During the month of October, the squadron arrived from the West Indies, after the reduction of Guadaloupe, so overrun with the scurvy, that when in the Channel ten or a dozen persons usually died of it every day. Out of three hundred and fifty scorbutic patients, who were sent a-shore from those ships, there was not one who had a fever. This I mention for the sake of the following remark.

" The surgeon of the Panther told me that forty of her men had died of the scurvy

in their passage home; and, during that time, there were usually ninety patients in the sick apartment. The place appropriated for the sick was in the *bay* of the ship, and had no pipe from the ventilator, nor any scuttles cut through its sides for the admission of the fresh air. A number of patients thus closely crowded together rendered the place so disagreeable and suffocating, that the sick were in a manner stifled for want of air. The surgeon, when visiting, could scarcely breathe in it, or remain for any length of time, without being obliged to have recourse often to the fresh air upon deck, and sometimes to the spirit of hartshorn, or to a glass of wine, for his immediate relief. He observed, that both the virulence and mortality of the scurvy were heightened by the unventilated air of the place in which the sick for several weeks had been confined; yet out of above an

hundred patients sent to the hospital by this surgeon, not one was remarked to have any symptom of contagion generated in that apartment."—P. 195, 6.

It would be impossible to conceive a combination of circumstances more favourable to the production of contagion, than that which is here related; numbers were crowded together in a small space, and in a state of extreme debility; in short, were in the very condition to render them extremely susceptible of taking infection, if it had been applied. To speak figuratively, it may be said that the fuel existed, the combustible materials were prepared, but the spark was wanting. The place was so disagreeable and suffocating*, that the surgeon could scarcely

* The cause of this sensation of suffocation has never yet been satisfactorily made out; for it appears by the most accurate chemical expe-

breathe in it, and was obliged to have recourse to the fresh air upon deck, and still no fever made its appearance.

riments that have yet been made, that the air of a crowded assembly, for example, the heated suffocating atmosphere of the gallery of a theatre, contains precisely the same proportions of oxygen and azote, which are to be found in the ordinary atmosphere without doors. It is of course loaded with aqueous vapour, and traces of carbonic acid gas are to be detected in it, but the essential constituent parts, oxygen and azote, are there in their usual proportions. We know that animals die before all the oxygen of the air, in which they are confined, is expended; and that if the carbonic acid, formed by their breathing, be subtracted, they will live the longer; but in the situation above alluded to, the loss of one portion of oxygen is immediately supplied by the free communication with the external air. What the cause of the distressing feeling of suffocation may be, of the

The very next paragraph of the same treatise by Dr. Lind contains the exact converse of the fact just related, and clearly proves the importation of the fever, and its appearance amongst a healthy crew, in consequence of their communication with some infected marines.

"The first ship," says he, "which arrived towards the latter end of this year from the fleet in North America was the Loestoffe. On the 18th of October fourteen of her men were sent to the hospital, and thirteen more on the 21st of the same month. The scurvy,

desire to rush out and to breathe the fresh air, is not discoverable on the application of chemical tests. Does the electrical state of such an atmosphere differ from that of the pure external air? This is a curious subject, which well merits to be investigated.

the flux, and fevers were reported to be the prevailing diseases in that ship.

"The account given of the fever was to this effect. The company of the Loestoffe were in perfect health during the eight months they were in America, and until a few days before their departure from Quebec. At that time six recovered marines came on board from *Point Levi* hospital, and in forty-eight hours afterwards, among her company of two hundred people, fifty were seized with fevers and fluxes. In some the sickness began with a flux, in others with a fever; but the flux was generally moderate and gentle. The fever continued commonly from five to ten days; two patients were distressed with it for a whole month. When the first attack was from the fever, a supervening flux proved salutary; but where the contagion made its

first appearance with a flux, the accession of the fever carried off the patient. This ship was twenty-seven days in her passage to England from Quebec, and during that time, six of her men died."—P. 197.

Many other instances are given by Dr. Lind of similar accidents; and two cases only noticed in which it might appear that a seasoned sound crew became infected from the closeness or damp below, occasioned by the hatch-way being kept shut. Against the numerous examples which prove the contrary, it will scarcely be contended that these two cases ought to have much weight, particularly when it is by no means clear that the infection was not previously on board, and was not disengaged by the imprudent opening of some unsuspected packages, in which it had been lurking.

The liability to be affected by contagious

diseases differs greatly in different individuals; some being acted upon by very small doses, if I may so express it, of the poison, while others resist even the strongest; but generally speaking, the causes that have been before enumerated, such as depression of mental energy from want of employment, loss of bodily vigour from want of nourishment, and the debility arising from previous excessive hot weather, having similarly predisposed the bodies of a great number of persons, the infection is applied, and the fever, whatever it may be, becomes general or epidemic.

It has been said, that the contagion of measles, scarlet fever, and hooping cough, like that of typhus fever, is never wholly extinct in any country; yet that these diseases prevail epidemically only during particular seasons: no one will deny the fact, but to explain it, it is quite unnecessary to

have recourse to any peculiar constitution of the air, which being once assumed, is then styled an occult quality, having no relation whatever to the thermometrical or barometrical condition of the atmosphere.

This is an opinion, however, which, as I have observed before, has been adopted by the most intelligent writers on this subject, and has prevailed from the days of Sydenham to the present time. Dr. W. Heberden* remarks, "that the presence of infectious matter is not alone sufficient to make the plague epidemical, but that some concurrent state of the air, and of the human body, is likewise necessary."

There can be no question about the latter condition, which, even in the opinion of the

* Increase and Decrease of Diseases, p. 95.

author just quoted, seems by far the most essential; for in another part of the same treatise, he expresses himself in the following manner, and does not seem to lay so much stress on the necessity of the aërial change.

"But a proper state of the air is not the only circumstance necessary to promote the operation of contagion. During the epidemical constitution, it is highly probable that good diet, and good spirits, and cleanliness, and fresh air, and proper clothing, and exercise, may all contribute to render the body less susceptible of disease; the seeds of which, like those of vegetables, will then only spring up and thrive when they fall upon a soil convenient for their growth*." In proof of this, he mentions that the plague at Moscow at-

* Increase and Decrease of Diseases, p. 68.

tacked chiefly the poor, committing few ravages among the nobles or the rich merchants. Likewise at Marseilles, "la peste fit ses plus grands ravages dans les quartiers habités par le menu peuple*."

So much influence, indeed, does Dr. Heberden attribute to our improved mode of life, that he thinks "our long exemption from the plague is not so much to be attributed to any accidental absence of its exciting causes, as to our own change of manners, our love of cleanliness and ventilation, which have produced amongst us, I do not say an incapability, but a great unaptness, any longer to receive it†."

The severity of our quarantine laws proves, however, that we still think the absence of

* Traité de la Peste.

† Increase and Decrease of Diseases, p. 96.

the exciting cause, viz. the contagion itself, is necessary to keep us quite free from the fatal visitations of the plague.

The opinion of Lind, whom I have so often quoted, on this subject, is expressed most clearly, and appears to be perfectly correct. "An infectious disease," he says, "is not, therefore, always such as the vulgar imagine it to be, a calamity which spreads itself to every person who approaches; the plague itself is not altogether of such a nature. It comprehends only a disease, which, in certain circumstances, may be communicated to others; there are certain constitutions or habits of body which are peculiarly susceptible of infection, and each species of infection finds constitutions which more strongly resist it*."

* On Fevers and Infection, p. 240.

In illustration of this, it has long been known, that with respect to the small-pox, during the utmost exertion of the force of that disease, endeavours employed to give it to some persons, by lying in the same apartment with the infected, and other methods of a free communication with them, often proved ineffectual. Some of the constant attendants about the sick in this disease have never been infected.

To account for the disappearance and cessation of infectious diseases, it has been supposed that the contagion has exhausted itself, abated by degrees in malignity, and at length stopped. Of the plague, it has been said, that when it was excited out of its proper season, it has not spread; that its chief force has always been felt in the summer and autumn; and that when it was raging in Italy, the Neapolitans used no

artifice to purify either their goods or houses, yet the disease ceased amongst them as entirely as in the best-regulated towns. It is also true, that the gaol distemper, or typhus fever, after every method used to destroy it has proved entirely ineffectual, will often of itself gradually abate, and at length entirely vanish.

May not all these several facts be explained by supposing a change in what I have called the *epidemic constitution*, which becoming no longer favourable to the reception of the infection, the contagious disease no longer spreads amongst the community?

The degree and danger of a fever has been imagined to depend, in a great measure, on the quality or the specific nature of the source from whence it has been derived; but without supposing that the contagion

of one typhus fever, for example, is more virulent than that of another, if we take into account the state of the recipient, and recollect also that the quantity of contagious matter, to the action of which the patient has been exposed, may be, from want of proper ventilation, greatly accumulated, these differences are the more easily explained.

After these preliminary observations on the nature of contagion, and on the general causes of epidemical diseases, I shall proceed to point out the great advantage which would result from their practical application to the treatment of a disorder with which we are all familiarly acquainted.

CHAPTER III.

Scarlet Fever.

One of the most remarkable circumstances connected with contagious diseases, is the property which some of them possess of attacking each individual once only in the course of his life. A change is thus wrought in the system, which is not evident to the senses, and it is remarkable that the same change is produced, in however slight a degree the morbid affection may have been experienced.

In one instance we have recently found that the change alluded to, is capable of being brought about by the occurrence of a different disease; one morbid affection, in this manner, being able permanently to alter

the condition of the body, so as to render it insensible to the operation of another contagion. I allude to the protecting power of vaccination against the infection of small-pox.

It has before been observed with regard to measles, that there is a considerable range of character in the disease: in one season it will be slight, in another severe, and at other times hold a middle course. It is usually mildest in summer, and most severe in winter and spring. In consequence, one of the ordinary cautions about preparing children for the reception of the measles, is in *unfavourable weather* to guard even strong children against exposure to cold, and to keep their bowels open, prior to infection. In other words, we are to endeavour to bring about, by artificial means, that state of body which sometimes exists spontaneously in a large portion of the community.

Dr. Willan, speaking of scarlet fever, remarks, " that according to the state of the air, the soil, climate, or season of the year, one form predominates over all the rest, and gives the general character to every epidemic scarlatina*."

His attention seems to have been directed chiefly to the state of the weather, and he drew no inference from the above observation, but left it, as a simple matter of fact, which afforded no practical deduction.

Small-pox and measles being found to be diseases that are almost inevitable in the present state of society, it is natural that mothers should be anxious and desirous that their children should have passed through these formidable disorders. All anxiety about the first of these complaints may be

* On Cutaneous Diseases, vol. i. p. 282.

considered now as nearly set at rest by the practice of vaccination; to receive the other, children are prepared by medicine, and exposed to the infection at favourable times, and when a mild sort of measles is prevailing. But as to a scarlet fever, the very name of it inspires so much dread, and so many people pass through a long life without ever having experienced, AS THEY ASSERT, the disease, that it is avoided with every imaginable precaution.

The symptoms of the small-pox, as well as those of the measles, are so obvious, and so decided in their external appearance, that little or no doubt can exist as to the fact, whether a person has undergone these diseases or not; but scarlet fever is so various in its character, and there is one form of it so extremely mild, that it does most certainly sometimes pass through the

system unobserved, and in many more instances under the name of a *rash*, exciting no alarm, and requiring no medical treatment.

No satisfactory reason has hitherto been given why a disease, so contagious as scarlet fever is well known to be, should not be as general in its attacks as the measles.

The discerning Sydenham says, speaking of this disease, "Infantes verò præ ceteris infestat*." And it is a common observation, that old people are not so liable to catch the scarlet fever as young persons. But the most natural and most obvious explanation of this fact is, that persons advanced in life have already had the disease; for this immunity from contagion is not ob-

* Opera Universa, p. 287.

served to hold good with respect to typhus fever, but only to be true of those diseases which are experienced once only during life. The very use of the word *infantes* is in support of my opinion. Children in arms are most liable to catch the infection, for the simple reason, that many boys and girls eight or ten years of age may, like older people, have undergone it before, but in so slight a manner as to escape observation.

It is upon the truth and accuracy of these remarks that the whole value of what I would wish to inculcate, in the following pages, must entirely rest.

There is sometimes in schools what is called a rash, a redness of the skin, of various extent and brightness, occasioned by an unusual quantity of blood distributed to that part. Nothing else, perhaps, is taken

notice of; the rash passes off without observation, or if it should happen to be for a moment imagined to resemble, in the smallest degree, that alarming disease, scarlet fever, the suspicion is instantly checked, and the whole matter hushed up as quietly and discreetly as possible. Now I am anxious to direct the attention of the public to this point; from a judicious practical application of which, I think, much advantage may be derived.

It has long been indisputably established, that the slightest of all eruptive fevers, viz. the simple scarlet fever, and that most fatal disease, the malignant sore throat, are varieties only of the same disease, and proceed from the same contagion. That the scarlet fever, like the small-pox, is in some rare cases to be had twice, will not be denied, though the proportion of such instances, which is

assigned by Dr. Willan, is perhaps unusually small; for he asserts that in 2000 patients, he had never seen a repetition of the disease; that is, that those who have once had the mildest form of scarlatina, have not afterwards suffered the malignant sore throat. It may, however, be safely affirmed, that scarlet fever does not occur twice, more frequently than the other specific contagions, consequently no argument can be founded on such an anomaly.

Dr. Heberden observes*, "According to my experience, some children have, beyond all doubt, been afflicted a second time with this disease; but it is evident that this happens very seldom; for otherwise, in such a common distemper, there could be no more

* Commentaries on the History and Cure of Diseases, p. 28, 29.

question about the possibility of a second infection than there is in the itch, or in venereal disorders. I have met with several grown persons who have had frequent returns of a slight sore throat, which, at these times, was beset with little ulcers, similar to those of the malignant sore throat, but without any, or at most, without much fever, and without any discolouring of the skin. If this slight angina bear any relation to the malignant one, it is not more than subsists between the small-pox and those eruptions which are sometimes observable in such as have already had that disease, while they are nursing and attending others who are ill of it."

There are, it is now universally admitted by all practitioners, some rare instances in which these contagious distempers do attack a person twice; but it seems quite

established, with respect to one of the most formidable of them, viz. the small-pox, that the very mild disease, produced by vaccination, if indeed it merit the name of a disease, is quite as good a preservative against the small-pox, as the most severe small-pox is itself against the recurrence of that disorder.

On the contrary, it has been maintained, that the mild measles, unattended by fever and catarrhal symptoms, does not destroy the susceptibility of receiving the *febrile* disorder afterwards. An interval of many months, or even of two years, it is asserted, has elapsed between the attack of this variety and the other; but the latter, or true genuine measles, usually occur about three or four days after the appearance of the non-febrile eruption. This is the opinion of Dr. Willan, who attempts, even by an

engraving, to represent this singular disease, which he has denominated *rubeola sine catarrho.* That such a variety ever exists is very questionable; and when it is recollected that the measles and scarlet fever are generally epidemical at the same time, it is much more probable that in the cases described by him, the eruption was that of mild scarlet fever, which, of course, affords no protection against the attack of measles.

It is very difficult, in some cases, to distinguish, with certainty, the two eruptions. That they were formerly often mistaken for one another, there is no doubt. Morton distinctly avowed his conviction of their identity*.

* Hunc morbum prorsus eundem esse cum morbillis censeo, et solo efflorescentiæ modo ab illis distare.—De Febre Scarlatina, cap. 5.

In his "Observations on the Increase and Decrease of Diseases," Dr. W. Heberden, endeavouring to account for the striking differences, in the bills of mortality, of the number of deaths imputed to measles, which amount, in some years, to one-thirtieth of the whole number of deaths; whereas at other times they fall short of one in four thousand, thinks that the measles and scarlet fever must have often been confounded together; nay, he himself does not appear to have made up his mind on the subject, for he expresses himself in the following manner: "If so, those two formidable distempers (if indeed they are two distinct distempers, and *not one and the same*) being disguised under the name of measles, may have been older and more general than is usually imagined."—P. 38.

There is also another opinion advanced

by Dr. Willan, which I should be much disposed to call in question; viz. that scarlatina is sometimes not completely formed, but appears with some of its symptoms only; as a pulse *rather* flurried, the uvula *slightly* inflamed, the tonsils a *little* swelled, the pain and inflammation varying, and the disorder going entirely off, without ever gaining a greater ground. In some persons, therefore, he thinks, the effects of contagion seem to cease, or perhaps have been removed by early applications. In these cases, persons are said to be not less liable to take the disease in its fullest form, when again exposed to its influence. It cannot be denied that people are not at all times equally liable to take an infectious disease, but it is much more probable, that in the cases above described, the patients resisted it altogether, and had some other ailment, than that they should have experienced a

sort of half-formed scarlatina. Such an occurrence is contrary to what we observe in other similar diseases, and is, perhaps, quite fanciful; for we know from observation, that in contagious disorders, the same change is wrought in the system, in however slight a degree the morbid affection may have been experienced.

As little confidence should I place in the assertion, that when persons have once decidedly had scarlet fever, they are liable, on being again exposed to its contagion, to suffer *one* of its symptoms, a slight sore throat, for example. It is true, that those who have once suffered cynanche maligna, are, during the remainder of their lives, subject to have a specked sore throat; but this arises from accidental causes, such as exposure to cold, acting on a part previously much weakened by a violent disease,

and has no sort of connexion whatever with contagion.

I cannot better illustrate what I would inculcate on the subject of scarlet fever, than by making a few extracts from a paper of Dr. Maton's, published in the fifth volume of the Transactions of the College of Physicians. Hence, will appear the occasional extreme mildness of that disease, and the propriety of attempting its diffusion under that mitigated form, when, indeed, it is as contagious as at any other time; instead of adopting measures to check its progress.

Dr. Maton begins his paper with observing, that there is probably no class of diseases, in which inaccurate diagnosis is more frequently made than in those of the skin; nor is error more likely to be followed with danger, than in that division of

cutaneous complaints which have been denominated exanthemata or rashes. The external characters of rubeola and scarlatina, for instance, do, on some occasions, assume so ambiguous an aspect, as to mislead even intelligent practitioners, if their examination be not made with due nicety and caution. Dr. Maton then proceeds to describe a disease, which bears so much resemblance to scarlatina, that he has no doubt of the one having been often confounded with the other, especially as no account of the former is to be found in nosological writers.

"My attention was first called," he observes, "to this subject some years ago, when scarlatina was stated to be prevalent in one of our great public schools, and when the different practitioners, whose attendance was called for on the occasion, ex-

pressed much surprise to one another at what was considered the slightness of the symptoms of that fever. I certainly did not at that time see reason for referring those symptoms to a different species of disease, for the eruption was precisely the same in its appearance; but the shortness of its duration, and the absence of all symptoms which could deserve to be denominated those of debility, made me resolve to keep a scrutinizing eye on all similar cases which came under my cognizance at future periods of my practice*."

An attentive unbiassed perusal of this paper will, I think, convince any one, that

* Medical Transactions, published by the College of Physicians in London, vol. v. p. 151.

the complaint which Dr. Maton met with, was really no other than a very mild scarlatina, and not a non-descript disease, whose history had been hitherto confounded with one sufficiently familiar to all medical men in this great metropolis.

The symptoms of the first patient, a young lady aged thirteen, were general indisposition, a scarlet rash suffused over the greater part of her skin, causing considerable irritation, especially after the patient had been exposed to a cooler air. The efflorescence was most vivid on the face and neck, where it appeared in innumerable points, which bore as strong a resemblance as possible to scarlatina. There was no inflammation of the fauces, the tongue was slightly furred, but the papillæ did not protrude through the fur; its edges and apex were perfectly moist and natural.

The pulse could scarcely be said to be affected. She had no pain whatever, and except an itching of the skin, she felt only a general disordered state of her system. The eruption had been ushered in by none of the usual symptoms of fever, or if there were any such, they had not excited any attention. The day after, an elder sister of the young lady was attacked with the same kind of eruption, preceded by rigors, and some of the other concomitants of incipient and febrile diseases. On the third day of Dr. Maton's attendance, without any medical treatment, except the exhibition of a dose of calomel and rhubarb, and some saline draughts, both patients described themselves perfectly cured of all indisposition. Four other children of the same family had been sitting with the invalids, so that even upon the supposition of the disease being scarlatina, *it seemed too*

late to prevent its further progress, by separating the latter from the former.

But the almost natural appearance of the tongue, which did not exhibit the bright red and elongated papillæ, the absence of unusual heat of skin, and the presence of an almost intolerable itching or tingling, which is not an ordinary concomitant of scarlatina, and the circumstance that it did not appear that any of the family had been exposed to the infection of that disease, induced the physician to hesitate in giving it that denomination, and to consider it rather as a cutaneous affection, arising from some disorder in the digestive functions. After an interval of about seventeen days three other members of the same family were attacked with the same disease, slightly varying only in the mildness or severity of its symptoms; and soon after two others,

making in all eight persons who had been exposed to the same contagion, and in whom the complaint required little or no medical treatment.

Dr. Maton lays some stress upon the great length of interval after exposure to contagion, as affording an additional reason why he would deny the name of scarlatina to this disease. Willan has asserted, that the sixth day is the latest period intervening between the application of the infection and the commencement of the disease; here the interval was seventeen days. But there are well authenticated cases of an interval of fourteen days elapsing, and this when the patient has been exposed to the infection of the most decided and well characterized scarlatina. Besides, nothing can be less conclusive than this point of the length of interval, for we know that in the instance

of the poison, the moment of insertion of which can be ascertained with the most perfect accuracy, I mean the poison of hydrophobia, the interval varies from forty days to six months*.

Perhaps there is less uncertainty with regard to the small-pox than any other similar disease; the fever of the former most commonly appearing on the seventh day after inoculation; but the contagion of typhus fever lies dormant sometimes, according to the testimony of Dr. Haygarth,

* Six weeks, or about forty days, is the most usual period. In a case which occurred a few months ago, in the Middlesex Hospital, under the care of my friend and colleague Dr. P. M. Latham, the interval was six weeks. The disorder was hopeless, as all such cases unfortunately are; and the patient died on the fifth day after the first appearance of the symptoms.

seventy-two days; and Dr. Bancroft has even asserted that it may lurk in the system so long as five or six months.

Speaking of the measles, Dr. Heberden observes, that the preparatory symptoms of that disease have appeared thirteen days after the infection had probably been received; in two others there was the greatest reason to judge, that they began to come on fourteen days after the time of infection. In four others, the infection seemed not to have lain dormant above ten days*.

It is well known also, that there is great irregularity in the appearance of some of the symptoms attendant upon the measles; for instance, the cough usually comes on two or three days before the eruption, but

* Heberden's Commentaries, p. 322.

it has been known to precede the measles seven or eight days.

To return to the cases of Dr. Maton; he mentions, that small tubercles or tuberosities, varying in size from a pea to a hazel-nut, made their appearance in three of the cases; and these he is disposed to consider as characteristic, and differing from scarlatina; but in the eldest patient there was no itching, so that the absence of the irritation of the skin, as well as the presence of the tubercles, can be considered as accidental circumstances only in a disease that evidently sprung from one and the same contagion. From the extreme mildness of the symptoms, Dr. Maton was inclined to think the disorder more allied to roseola or urticaria, which it resembled in the distressing tingling of the skin; but

then it was obviously infectious, which these two diseases are not.

It is with great deference I would venture to consider the cases above quoted to be rather a proof of extreme refinement on the part of that intelligent physician, and that it is hardly necessary to form any new denomination for the complaint he describes.

The scarlatina of Sydenham is precisely the disorder mentioned by Dr. Maton, agreeing with it in all its essential symptoms. Rigent horrentque sub initio, ut in aliis febribus, qui hâc afficiuntur, neque vehementer admodum ægrotant: postea cutis universa maculis parvis rubris interstinguitur, crebrioribus certè et multo latioribus, magisque rubentibus, at non perinde uniformibus, ac sunt illæ quæ Morbillos con-

stituunt. Ad duos tresve dies persistunt hæ maculæ, quibus demum evanescentibus, decedenteque subjectâ cuticulâ, restant furfuraceæ quædam squammulæ ad instar farinæ corpori inspersæ, quæ ad secundam aut tertiam vicem se promunt, conduntque vicissim*.

Sydenham considers the disease as nothing else than a moderate effervescence of the blood, occasioned by the heat of the preceding summer; or, as I should say, the preceding heat of summer had predisposed the body to receive the influence of a contagion, that had before been somewhere lying dormant. He judged it sufficient for the patient to keep his room, without lying always in bed, and to abstain from animal food and spirituous liquors. When de-

* Opera Universa, p. 287.

squamation had taken place, he gave a mild aperient, suited to the age and strength of the patient.

Simplici hac et naturali planè methodo, hoc morbi *nomen* (vix enim altius assurgit,) sine molestiâ aut periculo quovis facillimè abigitur*.

If more be done, he says, the disease is immediately increased, and the patient falls a victim to the over-officiousness of the physician.

Should any doubt still exist about this mild form being the true and genuine scarlet fever, it may be further removed by the observation, that the œdema of the ankles and wrists, which appears a fortnight

* Opera Universa. Febris Scarlatina, p. 288.

after the rash has vanished, and which is considered so characteristic of the disease, occurs after this mild form as well as after an attack of the most violent disorder.

An objection will doubtless be started, arising from the fact, that sometimes in a numerous family one child will have scarlatina, without communicating it to the rest, and yet at a succeeding period, several of them will be infected by a much slighter exposure to the contagion. This is certainly true, as well as that occasionally in the same family, every degree of the disease, from its mildest form to one that is very severe, will be seen.

These are exceptions, which do not always admit of any very satisfactory explanation; but still it is no less true, as has before been remarked, that one form or

type of contagious diseases is always observed to predominate over all the rest, and to give the general character to every epidemic.

The scarlatina of last summer was very mild; we had several cases of it in the Middlesex Hospital, and some were brought as out-patients, covered with the eruption, but otherwise suffering little or no indisposition. On one occasion a mother who brought her child with the complaint seemed alarmed, and anxious about the numerous family she had at home, who all ran the greatest risk of infection. I advised her to take no means to prevent their free communication with the patient, but rather to insure, if possible, their catching the disease.

Before I conclude, I will just enumerate

the leading symptoms of the more aggravated forms of the same disease. In the scarlatina anginosa, in addition to the fever and efflorescence, a considerable swelling of the tonsils takes place, beginning sometimes with the febrile accession, at others not perceptible till the scarlet eruption is at its acmè. A stiffness in the muscles of the neck and lower jaw is felt at the very beginning of the attack. On the second day of the fever the throat feels rough and straitened, the voice becomes hoarse, and deglutition is not performed without pain and difficulty. On the two following days, headache, vomiting, delirium, great heat of skin, quick respiration, a small pulse, extreme languor and faintness, come on. Upon examination a considerable enlargement of the tonsils is discoverable, with a florid redness, which extends over the neighbouring parts. The colour of the tongue is deeply

red, and the papillæ over the whole of its surface are greatly elongated.

All these symptoms are much aggravated in the other or most malignant form of the disease. Aphthous ulcers in the throat are visible sometimes on the very first day of the fever; the sores are numerous, deep, and sordid. The patient becomes hoarse and almost dumb. Sometimes the whole skin is intensely red at the commencement of the distemper; at other times only the breast and arms have this colour. On other occasions the efflorescence has not been observable before the fourth day of the fever, and in many patients it is scarcely or never perceived at all. The condition of the sores is to be considered as indicating the danger of the disease, which must be judged to be greater, in proportion as these ulcers occupy a larger space, are deeper, more firmly

fixed, and of a more gangrenous hue. In fatal cases the patient becomes, on the second day, comatose, breathes with great difficulty, bending back his head as far as possible: at the same time a purulent and highly offensive matter flows from his nostrils; the throat, on inspection, is found to be gangrenous, and death soon follows.

CHAPTER IV.

Treatment of the different Forms of Scarlatina—Recapitulation.

On the subject of the treatment of scarlet fever, I have nothing novel to propose; the mild sort requires little or no medical aid, and the practice in the severer forms of the disease appears now to be well understood, and pretty generally agreed upon.

In the scarlatina simplex, the principal attention of the physician should be directed to counteract the mischief likely to result from the mistaken zeal and officiousness of the patient's friends and attendants; to keep his apartment cool, and to remove all unnecessary weight and warmth of bed

clothes. The lightest diet and coolest drinks, with moderate laxatives, are to be recommended.

The two great improvements of modern days, in the management of febrile diseases, consist in the discovery of the powerful influence of diminished temperature, and the beneficial effects of purgative medicines; and in none are the advantages resulting from the use of these remedies more evident than in their application to the treatment of scarlatina anginosa.

The great heat of surface, the anxiety, restlessness, and general distress, which accompany the efflorescence, are all surprisingly abated by sponging the body with cold water, or water and vinegar, more or less frequently as the morbid heat recurs. A sudden change of countenance, and an

almost instantaneous improvement in the symptoms of the patient are observable, in a diminution of thirst, a more moist condition of the tongue, a cooler and less arid feel of the skin, and, almost uniformly, a disposition to quiet and refreshing sleep.

The washing or sponging may be more or less general over the surface of the body, according to the state of the symptoms; in moderate cases, the application of the cold water to the hands and arms, the face and neck, may be quite sufficient. The use of a remedy so simple, and yet so powerful in its effects, may be intrusted to the discretion of the least experienced attendant upon the sick, with the single precaution, to employ it only when the skin is hot and dry.

The dread of the employment of purga-

tive medicines has now in a great measure subsided, and their cautious use, even in the worst form of cynanche maligna, has been recommended by some of our most popular medical writers. Formerly it was laid down as a rule of practice in the malignant sore throat, to avoid all purgatives till towards the end of the fever; and if a spontaneous diarrhœa came on, to check it as soon as possible.

It was supposed that purgatives served to diffuse the acrid matter, descending from the throat into the stomach, over the whole surface of the intestines, and thus increased the source of contagion, and aggravated the irritation which arose from the presence of this deleterious matter.

But the moderate and free evacuation of the bowels, by a few grains of calomel, com-

bined with rhubarb or jalap, so far from causing the mischievous effects here enumerated, will expel the offensive and acrimonious mass, and instead of increasing the debility, will relieve the symptoms of general fever, and, united with the cool treatment above insisted upon, most materially expedite the cure of the disease.

No premature fading or disappearing of the efflorescence on the skin follows their employment, and they have the additional advantage either of preventing the dropsical swellings that frequently succeed an attack of scarlatina, or of removing them if persisted in, after convalescence from the fever.

Acidulated drinks are extremely grateful; a few drops of oxygenated muriatic acid diluted in water form perhaps as agreeable a refrigerant as can be contrived.

Blisters are very much approved of by Dr. Heberden, who says, the patient should never be without one or more, until he be out of danger; but acidulated gargles generally afford sufficient relief, and by preventing the acrid mucus, secreted by the inflamed tonsils, from being swallowed, may probably contribute to obviate the diarrhœa, which frequently follows the fever.

It has been thought that the free, and, at the same time, judicious employment of the cool washing, not only serves to moderate the violence of the febrile symptoms, and prevent their running into a state of putrescency, but also checks the tendency to dropsical effusion.

When the rash has quite disappeared, and the febrile excitement of the system has entirely abated, recourse may be had to the

use of cinchona, combined with the mineral acids. To remove the anasarca, if it supervenes, small doses of calomel, united to the remedies which have the reputation of being diuretic, may be administered.

The symptoms of rapid debility, and of malignant putrescency indicated by the livid and dark sloughy hue of the ulcers in the throat, and occasionally by the appearance of petechiæ and vibices on the skin, with hemorrhage from the mouth or alimentary canal, which characterise the cynanche maligna, necessarily point out a much more cautious use of the remedies before mentioned.

The viscid offensive matter that besets the internal fauces should be frequently removed by the gargle of capsicum, or the acidulated decoction of cinchona. As the

strength of the patient fails, it should be supported by wine, opium, and light nourishment.

I have mentioned, that scarlatina was formerly confounded with some other disorders, more particularly with measles; but in the present state of physic, when the distinguishing marks of diseases are so much better understood, and the accuracy of diagnosis carried to a much greater extent than it has ever attained before, it does not often happen that such mistakes are committed. The disposition, however, to refine too much, and to turn away from the evidence of the most natural and palpable appearances, in pursuit of some favourite speculation, may sometimes produce the same mischief, which would result from an utter want of the powers of discrimination.

It is well known that some errors in diet, some derangements of the functions of the stomach, and perhaps of the other digestive organs, do occasionally produce a sympathetic affection of the skin.

The nettle-rash, for instance, is frequently connected with teething or disordered bowels in children, and is often produced also by certain articles of food, as lobsters, crabs, shrimps, and more especially by muscles. In some individuals, the kernels of stone fruit, mushrooms, oatmeal, almonds, raspberries, or strawberries, will have the same effect.

The eruption produced by these various substances appears sometimes immediately after they have been eaten, and is not always accompanied by wheals, but is a mere efflorescence resembling that of scarlet fever.

The disordered state of the stomach, the sickness, langour, fainting, together with the heat, itching, stiffness and swelling of the skin are extremely violent for a few hours, but usually cease altogether in a day or two. The disorder scarcely requires the aid of medicine; at all events, a gentle emetic is all that is necessary.

I think that I have seen lately a case of genuine and well-marked scarlet fever, with slight sore throat, great heat and redness of skin, followed by desquamation of the cuticle, treated by copious bleeding, as well local as general, and considered as an inflammatory disease, arising from a disordered state of the digestive organs.

To recapitulate the substance of the fore-

going observations I have to remark, that if they are founded in truth and warranted by daily experience, we must come to the following conclusions.

As the causes producing epidemic diseases are not very numerous, and are much subject to our own control, the means of lengthening the duration and increasing the comforts of life are to a great extent placed in our own hands.

It has been seen that by a strict enforcement of the laws of quarantine, we have been able to banish the plague, and by the employment of vaccination, we have it in our power (if we choose to avail ourselves to the utmost of the benefits of that great discovery) to exterminate the small-pox; a contagion still more fatal than the plague itself. For the latter disease has never yet

been known in India, China, North or South America, nor in the arctic or tropical regions; while the small-pox has spared no nation, but has made its appearance in all seasons, and extended its ravages over every climate of the earth.

Till we are happily enabled (and the hope ought not to be treated as wild and chimerical, for who would, a few years ago, have believed in the possibility of a discovery so beneficial as vaccination?) to extinguish the other contagions, we should watch the favourable types of these disorders, and court rather than avoid their infection at such auspicious periods. For though it be true that some few persons pass through the vicissitudes of a long life, without ever catching the scarlet fever, such an occurrence is by no means common. I have endeavoured to show that its frequency has been, from

carelessness and inattention, greatly overrated.

The chance, therefore, of such an escape, ought to have no weight in the calculations of prudence and sound reasoning, as in the course of their lives, it is probable, that nine persons out of ten have undergone scarlet fever, in various degrees and shades of violence, from the unnoticed rash to the virulent form of putrid sore throat.

There is one other remark which occurs to me before I conclude, from which much practical benefit may occasionally be derived. Whenever it happens that a person infected with typhus fever, or any other contagious disease of a malignant character, is necessarily confined in a house occupied by a numerous family, he should be removed to the upper story. The current of

heated air is naturally upwards, and the atmosphere loaded with the contagious steams, emanating from the patient's body, will (if he be in a lower apartment) diffuse themselves over the whole house, whereas, if he be placed above, they will have a ready and immediate vent.

THE END.

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