

CHAPTER XIV.

FEVERS AND MIASMATIC DISEASES.*

Contents.—Typhoid fever—Typhus—Relapsing (Famine) fever—Measles—Scarlet fever—German measles—Smallpox—Chickenpox—Dengue and Plague—Glanders and Farcy—Intermittent and remittent fevers—Yellow fever—Mumps—Influenza—Epidemic cerebro-spinal meningitis—Cholera—Diphtheria.

Enteric, or Typhoid Fever.—The pathological conditions found in typhoid fever may be divided into the special and general. The *special* morbid changes consist of hyperæmia and swelling of the mucous membrane of the lower part of the ileum, particularly around Peyer's patches and glands. The congestion often extends to the peritoneum, &c. Later, the glands become infiltrated, and the solitary follicles may enlarge to the size of a pea; while the patches are raised, oval in shape, and may ultimately coalesce. Necrotic softening and sloughing may follow, and the excavations left extend to the muscular coat of the bowel, and sometimes even to the peritoneum. These typhoid ulcers are described as "elliptical in form, their margins thick and sharply defined, and their long diameter parallel with the intestine." Restoration may take place by granulation and cicatrization. Many cases do not go on to ulceration. The mesenteric glands become enlarged—secondary to the changes in the intestine.

Amongst the *general* morbid changes, congestion and enlargement of the spleen is important, sometimes, in relation to the diagnosis. The organ is at first firmer, but later it becomes exceedingly soft. The remaining general changes are those which are associated with all continued fevers, viz.:—softening and fatty degeneration of the heart, liver, &c.; granular infiltration of the kidney epithelium, with albuminuria; anæmia and œdema of the brain; catarrh of the bronchial mucous membranes—often with collapse or œdema of the lungs, and sometimes (rarely) pneumonia; and general congestive and catarrhal changes.

The *cause* of typhoid fever is the presence in the organs of the body of a specific micro-organism—the typhoid bacillus (*Eberthi*). Enteric fever is endemic, and sometimes epidemic. The usual vehicles by which the disease is introduced are drinking-water, milk and other foods, and air. The excrements of patients suffering from typhoid fever contain the germs; but the disease is not markedly

* Some of the miasmatic affections—as pertussis, hay asthma, &c.—have been more conveniently considered elsewhere.

contagious. A certain "susceptibility" to the poison seems to be necessary for its development; and one attack seems, but not always, to protect from a second seizure. The most common period of life in which typhoid occurs is between the ages of fifteen and thirty years. The period of incubation is doubtful. It appears to range from a few days to as long as four weeks.

The symptoms begin very insidiously, and during the early stages it is often difficult or impossible to be confident of the nature of the disease. In the *mild* cases, the fever is often well advanced before it is suspected. In typical cases, however, the diagnosis may safely be made, usually within a few days after the real onset. A prodromic stage, lasting a week or ten days, sometimes occurs, in which the patient feels "out of sorts." He is easily wearied, and he complains of loss of appetite, headache, and languor. Sometimes there is diarrhœa early, and at other times constipation. A feeling of chilliness may also be present. A few cases begin without warning, and again a very common mode of onset is that of a slowly developing *gastric catarrh*.

When the disease is fairly begun and the patient takes to his bed, a chart of the temperature may afford the earliest indication of the true nature of the affection—the "step by step" rise of the temperature during the early stages being very characteristic of typhoid. The fever has an evening exacerbation and a morning remission, but the course is gradual, as indicated in the chart on next page.

The subsequent course is also shown in the chart—the morning remissions becoming gradually greater. Two relapses are figured. The maximum temperature is generally reached by the fourteenth day. During the first week, the symptoms are those which characterise a gastric catarrh, in which there is diarrhœa, but often constipation. In the so-called "gastric type" the constipation may be present throughout the whole course. About the seventh or tenth day, rose-coloured spots may appear upon the abdomen. They continue to come out in crops—the original ones disappearing, and a fresh crop developing in other regions. They disappear upon pressure. Other eruptions—petechiæ, erythema, morbilliform rashes, herpes, &c.—may be present. The spleen enlargement may be made out at the end of a week, but it is more distinct later.

The stools—in the typical forms—are frequent, and of the "pea-soup" character. A microscopic examination would reveal the presence of numerous micro-organisms. As the disease progresses there is pain upon pressure, and gurgling, in the right iliac fossa. The abdomen is often distended. The patient often complains of aching pains in the limbs and back. Gradually a somnolent condition and low muttering delirium supervene. In some cases the delirium is violent and furious, while in others it culminates in complete stupor and coma. Picking the bed-clothes and subultus tendinum are common, and the urine and fæces are often passed involuntarily. The pupils are generally dilated. The urine is at first diminished, but afterwards it may become increased in quantity. The urea is increased, the chlorides diminished, and albumen is often present.

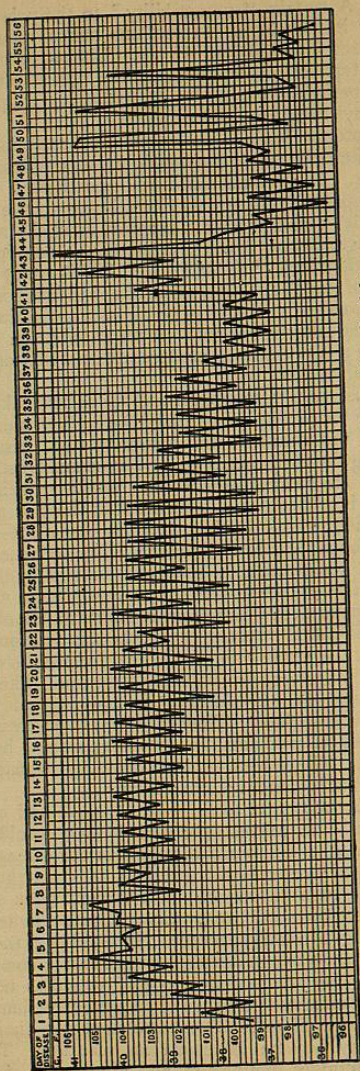


Fig. 41.—Course of the temperature in Typhoid Fever (Wunderlich).

(For the diazo re-action see Appendix.) The teeth become covered with sordes, the face thin and pinched, and the lips dry. The tongue in typhoid is red at the edges, and often has the fur in two parallel lines from before backwards. In *putrid* cases the tongue is like a hard, dry, glazed ball. The heart-sounds are indistinct and the pulse is very frequent and compressible, and the tension very low.

The *course* and *duration* vary. Should recovery be about to take place—generally about the fourth or fifth week—the patient becomes conscious, and the delirium and diarrhoea cease. The temperature gradually becomes normal, the termination being by *lysis*, during which the gastric symptoms improve, and the spleen diminishes, &c. Very mild cases may terminate within three weeks; but usually typhoid runs a course of five or six weeks, and even may be continued much longer as there is a great tendency to relapse. Death may take place from the exhaustion and emaciation which results from a continued high temperature.

During the course of typhoid, *hæmorrhage from the intestines* is a very frequent complication. Sudden collapse and pallor, with a fall of the temperature and a sudden increase in the frequency of the pulse, are the indications that a hæmorrhage has taken place. It may occur at any period. *Perforation* of the bowel is also another possible complication. It occurs in the later stages—from the third to the fifth week—and it is due to extensive ulceration reaching the peritoneum, and opening into the peritoneal cavity. Sometimes it is the spleen or a gland which ruptures into the peritoneum. Sudden pain and distention of the abdomen, a feeble pulse, and symptoms of *collapse* may usher in a fatal termination; or the escape of the contents of the bowel into the peritoneal cavity may produce acute peritonitis—if the patient recover the shock. Death within a few days is the usual result of perforation in such cases. If the perforation take place when the patient is comatose, there may be no apparent evidences of it. The other possible complications described are, thrombosis from cardiac weakness; epistaxis; erysipelas; bronchitis; œdema glottidis; diphtheritic ulcerations; pneumonia and pleurisy; Bright's disease; tuberculosis; bed-sores; mental derangements, &c.

Various *types* are described according to the prominence of certain symptoms, viz. :—the *abdominal*, *gastric*, *nervous*, *putrid typhoid*, and *hæmorrhagic* forms. The presence of the typhoid bacillus in the diseased organs favours the growth of other micro-organisms, as the streptococcus, *B. coli*, pneumococcus, staphylococcus; hence there is often a *mixed infection* in typhoid.

The *prognosis* must always be guarded. Should the temperature never rise above 103° F., and should the patient be fairly robust, a favourable issue may be hoped for. Frequent remissions of the temperature make the case still more hopeful, as they spare the patient's strength. The effects of treatment, the age, and temperament have all to be reckoned in the prognosis. Alcoholic patients do badly. The possibility of complications makes it very hazardous to give any opinion as to the ultimate result.

In the diagnosis of typhoid fever the "step by step" rise of the temperature in the early stage, is a highly important symptom. *Gastric catarrh* has no such rise, and the history, subsequent course under treatment, without enlargement of the spleen, or appearance of any of the other symptoms—as the rose-coloured spots, the stools, and pain in the right iliac fossa, &c., will serve to distinguish the simple catarrh. In some works, a simple continued fever is described, which seems to be related, or may be regarded, as a separate form of typhoid. The temperature rises slowly and remains about 101° to 103° F., for a few days (or as long as ten days) with gastric symptoms—such as coated tongue, slight delirium, constipation usually, and all the other signs of pyrexia. It terminates without any further developments. It is commoner in hot climates; and it occurs in older people, while the true typhoid fever is more apt to attack the young. (For "serum test" of typhoid, see Appendix.)

The chief diseases—besides those just mentioned—from which typhoid fever may require to be distinguished, are as follow—viz., typhus fever; general miliary tuberculosis, or acute phthisis in which the physical signs are obscure; ulcerative endocarditis; tubercular meningitis; epidemic cerebro-spinal meningitis; pyæmia; and abdominal affections (peritonitis, typhlitis, &c.). Some of these affections only require to be mentioned in order to be readily excluded, in most cases. Typhus fever occurs rather abruptly, the rash is different and earlier, constipation is the rule, and there are no abdominal signs. The pupils are generally contracted. In tuberculosis, the repeated examination of the chest, and the examination of the choroid for tubercles, may yield important information. The presence of dyspnoea or sweating, and the behaviour of the temperature, or the appearance of the patient, &c., may suggest a clue, in the absence of symptoms peculiar to typhoid. In ulcerative endocarditis the cardiac murmur is marked. In meningitis there is great intolerance of light and noise, whereas in fever, the senses are blunted. The headache increases during the course of meningitis. In pyæmia, the temperature is subject to great variations, and the joints are usually inflamed. The abdominal affections have their physical signs, but none of the symptoms proper to typhoid, and the patient—except sometimes in the later stages—has not the "felled look," so common in fever.

The treatment of mild cases of typhoid fever requires little more than the regulation of the diet, and absolute rest in bed, with ordinary nurse's care. No specific remedy is known; but *calomel* in large doses has its advocates. For the reduction of the temperature, quinine, or antipyrin—in twenty grain doses, if necessary—should be used. The cold bath, or wet pack, is another effectual remedy for pyrexia. The bath should be comfortable when the patient is first placed in it. It is then rapidly cooled down. It should never be used when the heart's action is weak, or if there be any tendency to hæmorrhage. Antiseptics—*e.g.*, perchloride of mercury, β -naphthol, salol, &c.—are much used.

Digitalis is sometimes used as an antipyretic; but it cannot be

given when the stomach is irritable. Morphia may be given for restlessness. Astringents, as opium and bismuth, &c., may be prescribed for excessive diarrhœa. Ergotin should be injected, hypodermically, when there is hæmorrhage from the intestines; and morphia, when there is perforation. Ice may be applied to the abdomen when there is hæmorrhage. A tendency to bed-sores is counteracted by the application of alcohol and white of egg. Copaiba with castor oil, is a good dressing for bed-sores. Stimulants are not as a rule required, but any failure of the heart's action should be met by the administration of small doses of whisky, or brandy, in water. They are contra-indicated when there is hæmorrhage.

The milk diet should be continued throughout, and many cases are fed upon milk alone. It should be given in small doses (two to four ounces) every three hours. Weak chicken tea may be allowed. Beef tea, sometimes, increases the diarrhœa, and should not then be given. The milk may be diluted with lime water, or barley water, if the stomach be irritable. The white of an egg with milk, may be allowed. During convalescence, light milk puddings, chicken, and fish are gradually added; but great caution is required in giving solid food, as relapses are very commonly due to this cause. Water may be freely allowed.

The room should be well ventilated; and the stools should be disinfected in the bed-pan before removal. This can be done with sulphate of iron or carbolic acid, &c.

Typhus Fever.—The pathological conditions found in typhus consist merely of *congestive* changes, and all the organs are more or less affected. Some slight ulcerations of the intestines may be present. The blood is darker, and not firmly coagulable; and thrombi are common in the veins.

The causes of typhus are overcrowding, bad food and air, &c. The nature of the germ is unknown. The disease is very contagious, and it is often epidemic and more virulent during times of famine. One attack exempts from a second. The incubation period extends from a few hours to nine or twelve days—some say even to twenty-one days.

The symptoms may begin with a short prodromic stage, in which there is headache, giddiness, sleeplessness, and general *malaise*. Often the patient is suddenly seized, and in a few hours he lies in a state of profound adynamia. The fever has not the gradual "step by step" rise of typhoid, but reaches 103° or 104° Fahr. in two or three days, and is continued with an exacerbation in the evenings. The patient—when the case is a typical one—lies with a completely "felled look." The eyes are half closed, fixed, and dull, and the pupils are contracted; the mouth is open, and the tongue is dry, black, and glazed-looking; the teeth are covered with black sordes; the face and skin are dusky, and the conjunctivæ are injected. Often there are pains in the back and limbs. Typhus cases emit a peculiar odour, and many nurses are able to recognise a case from this symptom. About the fourth to the seventh day, a dark, mulberry-coloured rash appears,

somewhat resembling measles. It generally appears first on the back, and between the shoulders. The spots may be few or numerous, and are slightly raised, and in the early stages they disappear for a moment on pressure. *Crops* of them disappear, and appear, during the second week. It is supposed, by some authors, that the darker the eruption the more unfavourable is the case. At the end of the first week there is active delirium and sleeplessness, or the "low muttering" form with hallucinations and illusions. The state of *coma vigil* is common. The pulse is very frequent and compressible, and the heart-sounds rapid, feeble, and indistinct. The stools are dark and offensive, but there is no diarrhoea. The abdomen is not distended. The urine is scanty—and usually contains albumen. The urea is increased, and the chlorides diminished. The urine and fæces are discharged involuntarily when the patient is comatose. The spleen is enlarged. Bed-sores are common.

The patient may die during the second week from failure of the heart, or from hypostatic congestion of the lungs, &c., or from coma. Many cases recover about the fourteenth day. The return to consciousness is sudden (crisis), and the patient falls into a quiet sleep. The tongue begins to clean, and the skin bursts into a perspiration. The patient is extremely feeble, but gradually the pulse and heart recover strength, and the case passes into convalescence. The *duration* of a case of typhus fever varies from three to four weeks, or longer if there be complications. Some cases run a much milder course than the typical one just described. Instead of coma, there is only confusion of mind and slight fever. The common complications during the course of typhus are the following, viz.—bronchitis, pneumonia, congestion of the lungs, gangrene of the lungs, pleurisy; erysipelas; thrombosis of the femoral vein; hæmorrhages from mucous tracts and from the kidneys; sometimes paralysis; gangrene of the skin (bed-sores) or of the extremities; &c. Mental derangements often occur as sequelæ to typhus fever.

In the diagnosis of typhus fever the following diseases must be noted and excluded, viz.:—typhoid fever; meningitis; uræmia; delirium tremens; pyæmia; and measles. The mistake should not be made of taking some complication—as bronchitis or pneumonia—for the substantive disease. Often, however, it is impossible to diagnose typhus until it has run part of its course.

For the differentiation of the above affections see also the diagnosis of typhoid fever. In uræmia, there is possibly a history of kidney disease, with violent headache and delirium, and often convulsions. Some urine should be drawn off with a catheter (if necessary), and examined for albumen. In delirium tremens, the excitement is different in character, and the nature of the delusions, and the previous history—are generally sufficient to differentiate this affection in the absence of other symptoms peculiar to typhus. In a case of typhus, occurring in a child, measles must be noted. In measles, there is catarrh of the respiratory passages, and the rash is brighter, and appears first upon the face. The typhus rash is mulberry-coloured, and generally appears first upon the back. Some-

times, in pneumonia, there is a rash which strongly resembles that of typhus fever (*Grainier Stewart*).

The treatment of typhus fever is upon the same lines as the treatment of typhoid. As there is greater adynamia and stupor, the bladder should be carefully watched, and the catheter used when necessary. There should be complete isolation, as typhus is very contagious. The excretions should be thoroughly disinfected and removed.

Relapsing (Famine) Fever.—The pathological changes are indefinite. The organs are congested, and occasionally wedge-shaped infarctions are found in the spleen, &c. The spiral-shaped organism—*Spirochæte Obermeierii*—is found in the blood during a paroxysm, and it is the cause of the fever. It develops amongst the filthy, crowded, and unhealthy or weakened population; and it occurs only as an epidemic, and is markedly contagious. The drinking-water is the chief vehicle by which the disease is carried to the system. The incubation period extends from four or five to seven days.

The symptoms begin with general *malaise*, rigors, and a rather sudden development of fever. The temperature ranges from 102° to 103° Fahr., with an evening exacerbation, accompanied by all the usual phenomena of pyrexia—as headache, coated tongue, gastric disturbance, increased frequency of the pulse, &c., and pains in the back and limbs. The bowels are confined. The liver and spleen enlarge, and there is pain in the hypochondria. There is weakness and emaciation, but no delirium. The characteristic symptom, which gives the fever its name, occurs about the end of the week, and consists of the sudden fall of the temperature and a cessation of the other symptoms. In three or four days, however, the attack occurs as before, but—if a favourable issue be about to take place—the second seizure is not so pronounced as the first. Several relapses may take place in succession, all of which tend to reduce the patient. The *duration* of an ordinary case (without continued relapses) is about three weeks. Bronchitis and pneumonia are the commonest complications. The prognosis is generally favourable, except in very weak and starved people.

The treatment is not very satisfactory. Salicylate of soda, in large doses, is recommended. Iron tonics should be given during convalescence. The management, and diet are the same as in fevers generally.

Measles—Rubeola.—Measles is a contagious eruptive fever, associated with a catarrhal condition of the respiratory mucous membranes. One attack usually, but not always, protects from a second. Although a disease of childhood, infants at the breast generally escape. The incubation period extends to nine or eleven days, and some authors say to *fourteen* days.

The symptoms begin with chills, headache, and weariness, the temperature rising two or three degrees, rather abruptly. Sometimes

in young children the attack begins with a convulsion. On the first or second day, the hyperæmia of the pharynx, larynx, nares, and conjunctivæ develops. The catarrhal symptoms then appear—as sneezing, watering at the eyes, and cough, with sibilant râles heard on auscultation, &c. Sometimes there is epistaxis. The temperature generally falls on the second day, to rise again, however, about the *fourth*, when the characteristic eruption makes its appearance. The rash comes out first upon the face and cheeks, and it is dark-red, sometimes sharply defined, and at other times accompanied by a diffuse redness. The spots disappear for a moment on pressure. They often run together in crescentic groups. The skin feels uneven, but the elevated papules are smooth and soft. The rash quickly spreads to the trunk, and then, in a less degree, to the limbs generally. It remains *acute* for about twenty-four hours, and about the seventh or ninth day it begins to fade, and the temperature returns to the normal (crisis). During convalescence the skin over the papules is shed in “branny” scales. The cough and catarrhal symptoms continue throughout, and there is abundant mucous secretion from the affected membranes. The case terminates in about a fortnight if no complications supervene. The common complications are catarrhal pneumonia and bronchitis, or croup; diarrhœa; chronic conjunctivitis, iritis or ulcer of the cornea; and inflammation of the middle ear, &c. Phthisis (after catarrhal pneumonia), diphtheria, and Bright’s disease are common sequelæ of severe measles. The severity of the attack varies with the strength of the poison apparently, as epidemics may be mild or severe. Sometimes measles has no accompanying catarrh; and sometimes there are cases in which there is no eruption. The eruption is sometimes *suppressed*, and it may appear as late as the tenth or twelfth day—the little patient, during that time, being supposed to be struggling with some bronchial affection only. A *hæmorrhagic* form is described, in which there are hæmorrhages into the skin, and from the mucous membranes, with great weakness and prostration.

The prognosis of simple cases is always good; but an excessively high temperature, the hæmorrhagic form, and cases in which the eruption is slight or “suppressed,” are unfavourable, and death may result from these conditions, or from severe complications.

The treatment, in mild cases, requires only rest in bed, warmth, and, if necessary, a simple diaphoretic and cough mixture (R 63). A simple laxative should be given. The skin may be rubbed with vaseline. Quinine may be used, if antipyretic treatment be indicated; and cold baths and packs are sometimes necessary, when the temperature rises and continues above 104° Fahr. The room should be warm, and should be kept darkened. The patient should be isolated. For the bronchial complications, the treatment is the same as in simple bronchitis and catarrhal pneumonia (*vide* p. 92). The diet should consist almost exclusively of milk.

Scarlatina. Scarlet Fever.—In addition to the morbid changes common to all fevers, there are special features in the patho-

logy; but these are described along with the physical signs and symptoms. Scarlet fever occurs as an epidemic, sometimes mild and sometimes severe, and this depends upon the strength of the poison. A micro-organism is in all probability the cause; but unless Klein’s streptococcus be accepted, this has not as yet been proved. The disease is common in children between the second and fifth years, but it may attack persons of any age. Infants are not liable. A susceptibility to the poison seems to be necessary, as many escape who have been exposed to the contagion, and it is admitted that no fever is more contagious than scarlatina. The breath, skin, and epithelium all contain the poison, and it may retain its power, lurking in the clothes, &c., for many months. Milk is very frequently the vehicle by which the poison is conveyed to the system. Sore throats—without the other symptoms of scarlet fever—are common in those who nurse scarlatinal cases. One attack of scarlatina generally protects from a second seizure, but not invariably. The incubation averages about a week; but the period extends from a few hours to fourteen days (?).

The symptoms begin suddenly with chills, headache, and vomiting; and sometimes, in the young child, with a convulsion. The throat symptoms generally develop at the same time, with high fever. The rash appears in about twenty-four or thirty-six hours. It appears first upon the chest and inner parts of the thighs, and after affecting the trunk it spreads to the limbs. In some very mild cases the rash is evanescent, and may escape notice; but, as a rule, it is well developed in twenty-four hours, and gradually fades away in about three or four days. Sometimes the rash is delayed, and appears so late as the fifth day (*Scarlatina latens*). It is bright red in colour, and diffuse usually, with dark punctiform spots throughout, due to the enlargement of the papillæ. The skin itself is œdematous. The throat is at first intensely congested, the tonsils are enlarged, and ulceration generally follows. There is swelling of the submaxillary glands, and often of the cellular tissue of the neck. The tongue at first is coated with fur, but it assumes a bright red “strawberry” appearance about the fourth day. The urine is scanty, dark red, or smoky looking, and it deposits urates on cooling. It generally contains albumen. The fever runs a continuous course, the temperature reaching 103° or 105° Fahr. almost at once, remaining at about 103° or 104° Fahr. for the next three or four days, when it gradually falls (*lysis*), and terminates in about ten or twelve days. During the height of the fever there is headache and often delirium. The pulse is increased in frequency in relation to the temperature. The skin becomes moist with the cessation of the fever, and desquamation then begins—scaly or furfaraceous in the mild cases, and large flakes peeling off in the severe. The desquamation continues for six, eight, and sometimes ten weeks, according to the severity of the dermatitis.

During the *course* of scarlatina, there is a tendency to certain complications which must be kept well in mind. A case may begin very mildly, and end very seriously. The cervical glands may sup-

purate, or a diffuse cellulitis may dissect down the neck. The throat symptoms may be very severe, and swallowing may be difficult. Deep suppuration may supervene. Sometimes a diphtheritic slough forms and extends up and down the respiratory passages. *Inflammation of the middle ear* is very common. Laryngitis and œdema of the larynx, bronchitis and pneumonia, pericarditis and endocarditis, pleurisy, or peritonitis—are frequent complications. Hyperpyrexia is common in the earlier stages, and it requires vigorous treatment. The commonest complication, however, is *acute glomerulo-nephritis*, and as a consequence of this there is dropsy, and uræmic symptoms may develop at any time during its course. It occurs usually about the *third week*. Acute rheumatism is very common.

A few *types* of scarlet fever are described, according to the prominence of the symptoms; hence, *S. simplex*, when there is no sore throat; *S. anginosa* (or septic form), when the throat symptoms are marked; *S. maligna* (or toxic form), when the type is so virulent as to threaten life by producing great prostration and nervous symptoms. Death may occur from syncope or from gastro-intestinal irritation; or the fever may produce such adynamia as to be well described as the "typhoid" type.

The prognosis of the simpler forms is favourable; but the possibility of even the mild forms assuming a severe type—or terminating in dangerous complications—makes it necessary to be guarded in expressing an opinion of the future course. The malignant forms are highly dangerous to life.

In the diagnosis care should be taken to express no confident opinion about a sore throat (especially in children) until the skin has been carefully examined. The scarlatinal rash may not appear until the next day, or it may have been so slight as to have escaped notice, and subsequent desquamation, or Bright's disease, reveals the true nature of the disease. Diphtheria, syphilis, and the ordinary sore throats have to be noted.

The treatment of scarlatina is purely symptomatic as no specific is known. At the beginning, drop doses of the tincture of aconite may be given for the fever. Quinine may also be used, and the cold bath or pack may be necessary, or tepid sponging of the body. If the child be old enough, a gargle of chlorate of potash and warm water, or Condy's fluid (diluted), should be ordered. When not old enough to gargle, the throat may be painted with boroglyceride. Ice may be sucked. For the swelling of the glands, gentle rubbing with warm olive oil is soothing. A wet compress may be rolled around the neck in the early stages when the throat is acutely inflamed. Drop doses according to the age, of the tincture of belladonna, is useful when the rash is delayed. The skin should be rubbed with carbolised vaseline, and especially should this be carried out regularly during the long stage of desquamation. The diet should consist almost exclusively of *milk*. Complete isolation is necessary; and sheets saturated with carbolic acid should be hung over the doorway of the bedroom in cases treated at home. The

treatment of the various complications will suggest itself; and it does not differ from the management of simple conditions of the same nature. The ear must have careful attention. A naso-facial douche, containing chlorate of potash and free chlorine, will be required in septic cases. The state of the kidneys must be watched. Suppuration of the glands must be relieved, &c.

Roetheln—German Measles.—This affection partakes of the character of both scarlatina and measles, inasmuch as there is a sore throat, like the former, and a rash and catarrh, like the latter. It is, however, quite a different disease from either, and an attack of one does not protect from either of the others. It is a contagious disease, with a period of incubation of about ten or fourteen days. The symptoms begin suddenly with slight *malaise* and fever. The invasion period lasts about four days. The eruption appears upon the breast, arms, and face, and then becomes general. At first, it is quite like measles, but afterwards it becomes more diffuse, and more like the scarlatinal rash. It fades away in about a week or ten days, and is followed by "branny" desquamation. These symptoms are accompanied by more or less catarrh of the respiratory mucous membranes, with sneezing, cough, and mucous expectoration. One attack exempts from another. Adults are often affected. The prognosis is almost always favourable. The treatment consists of keeping the patient warm, and perhaps the administration of a diaphoretic or cough mixture.

Variola—Smallpox.—The nature of the smallpox virus is unknown. Smallpox occurs at all ages—even affecting the *fœtus in utero*. The negro races are highly susceptible. One attack generally protects from a second, but not always. It occurs as an epidemic, and the pustules—moist or dry—contain the poison, which may preserve its power for many months when adherent to articles of clothing, &c., which have not been exposed to free ventilation. During the course of a case of smallpox, it is contagious from beginning to end. The incubation period extends to ten or fourteen days.

The symptoms of a typical case begin with a chill, or a series of them, during which the temperature rises to 103° or 104° Fahr., and it remains high until the stage of eruption, with a slight morning remission. The pulse is full and bounding, and increased in frequency according to the degree of fever. At this stage the pains in the back and limbs are present, and in some cases they are described as agonising. There is nausea and vomiting, headache, sleeplessness, and sometimes delirium and convulsions. The appetite is lost, and the thirst is generally intense. The face is flushed and the conjunctivæ are injected. At this period—the first, second, or even as late as the third day—the *initial* rashes appear. Sometimes they are absent. They are either of the erythematous or hæmorrhagic type, and they appear first on the lower part of the abdomen, genitals, and thighs, and next upon the chest. The erythematous

form resembles either the rash of scarlatina or measles—the hæmorrhagic consists of minute extravasations (petechiæ). They fade in about twenty-four hours.

The *stage of eruption* occurs about the fourth day, when the papules appear upon the forehead, face, and scalp, and then they extend to the body. They soon feel hard and “shotty.” The temperature falls, but rises again when the papules begin to suppurate. In the ordinary typical cases the eruption is complete in about a day, or a day and a half. On the third day of the eruption the papules become *vesicular*; and about the fifth day, *pustular*. Umbilication of the vesicle is noticed when the vesicle is fully matured. The *stage of suppuration* is reached about the *ninth* day of the disease. The pustules enlarge, the skin around them becomes swollen, and when numerous the œdema is general. The maturation proceeds in the order of the appearance of the papules, and it is accompanied by more or less fever, according to the form of the disease. The distress of the early stages recurs. The itching is often intense, and the delirium often maniacal. The pustules begin to dry up about the eleventh day, and a clear yellow exudation covers the surface of the pustules. At this stage the *odour* is peculiar. As the pustules dry up, the swelling falls, and cicatrices begin to form, leaving the well-known disfigurements of smallpox.

The course of a case varies somewhat with the form. The *discrete* form has the pustules separate and distinct; the *corymbic* has clusters of pustules; in the *coherent*, they are in contact; and in the *confluent*, they unite or flow together. *Hæmorrhagic variola* is another form characterised by hæmorrhage into the pustules and extravasation of blood into adjacent parts. There are also bleedings from the nose, gums, kidneys, or uterus, and great prostration.

The *discrete* form is the mildest, and is that form which is most likely to occur in the vaccinated. When the stage of eruption is reached the temperature suddenly falls, and the patient becomes fairly comfortable. In severe cases of the discrete, or in the coherent form, the decline is more gradual. In the *confluent* form there is scarcely any remission of the fever. The mucous surfaces, conjunctivæ, bronchi, vagina, &c., become covered with the eruption, and symptoms will arise according to the seat and irritation. Ulceration of the cornea is common. Stupor and delirium with nervous symptoms are generally marked in the confluent form. There is generally a more acute stage of invasion in this form, and diphtheritic exudations (pharynx, larynx, &c.) are very common. The urine generally contains albumen.

Varioloid is the name given to that modified form of smallpox which occurs in those who have been previously attacked, or who have been vaccinated. It generally resembles a mild attack of the discrete form.

The *course* of smallpox varies with the form. The discrete, corymbic, and coherent may be mild or severe, but they run a more definite course, and the severity is gauged by the amount of the pustular eruption. The *confluent* and *hæmorrhagic* forms are more

dangerous. Common complications, or sequelæ, are pneumonia, pleurisy, pericarditis, and pyæmia; ulcers of the cornea, blindness, &c.; chronic ear disease and deafness; abortion in women; suppurations of the joints, abscesses; and diphtheritic affections of the throat or larynx. An ordinary case of discrete smallpox runs a course of about six weeks. The serious forms may extend to several months if complications supervene. Death may result from the severity of the fever, or from intercurrent affections. The prognosis must always be guarded; but after a few days when the form is defined, it may be more favourable, in relation to what has been said above.

The treatment of smallpox is purely symptomatic, and need hardly be detailed. It consists of the treatment of a *fever*. Quinine is used for high temperatures. Bromide of potassium for headache and delirium. Morphia may be required. Ice in the mouth is very grateful. For the treatment of the face, to prevent pitting, many expedients have been recommended. Cold compresses, painting with tincture of iodine during the papular stage, glyceride of starch, &c., are a few of these remedies. According to Professor Stewart, the prescription of a Hungarian physician of carbolic acid, olive oil, and triturated chalk promises good results (R. 64). The diet should consist of milk, beef-tea, eggs, &c. A stimulant may be required. Complete isolation and disinfection are necessary. The patient's friends who come in contact with him, or who have been in any way exposed to the infection, should be re-vaccinated.

Varicella or Chicken Pox is a mildly contagious disease of childhood. It is characterised by an eruption with slight fever. The papules appear on the first day upon the trunk, and slightly upon the forehead, the number being usually very few (thirty or forty), but sometimes numerous. They become vesicular in a few hours. The fever declines upon the second day, and the vesicles dry up, leaving in some cases a slight cicatrix about the fifth day. It usually occurs as an epidemic. There is still doubt about the period of incubation. It may extend up to the twenty-seventh day (Trousseau). A fortnight is believed to be the usual incubation; and eighteen days is the longest period usually allowed. The *treatment* consists of the administration of a febrifuge if necessary. Generally, nothing is required. The *differential diagnosis*, in severe cases, requires only that smallpox be excluded.

Dengue, Breakbone Fever, is a contagious disease, occurring as an epidemic in tropical countries. It begins with violent rigors, pains, and swellings in the joints, with the appearance of a rash like scarlatina. The temperature falls with the development of the rash; but in a few hours (it may be within three days) a second paroxysm occurs with great prostration and headache, &c., with the development of another eruption, usually beginning upon the palms of the hands and accompanied by intense itching. The termination, after about three days' fever, is by lysis. Desquamation follows. The joints may remain stiff for a considerable time. The incubation period appears to be very short, cases being recorded of almost immediate seizure after exposure to the