cella, and scarlatina reaches its maximum in a day or two. The eruption of measles is accompanied by coryza, watering of the eyes, a coarse, bronchial cough—that of scarlatina by sore-throat and swelling of the submaxillary and sublingual and cervical glands; both desquamate—the former in fine, furfuraceous scales, often not perceptible—the latter in large flakes and very distinctly. The pustule of small-pox forms a distinct crust and leaves a scar; that of varicella dries up and drops off without a mark. The eruption of measles differs from roseola in that the former is darker in color, is accompanied by fever, coryza, etc., not present in the latter.

Stage of Desquamation.—Desquamation occurs in both measles and scarlatina, but differs greatly in thoroughness, as is above stated. The complications of this period are, in scarlatina, affections of the kidneys, dropsy, uræmia, etc.; of measles, catarrhal pneumonia, capillary bronchitis, and ileo-colitis. Desquamation does not occur in small-pox until the pustules have matured and crusts formed.

ERYSIPELAS.

Definition.—*Erysipelas* is a self-limited, febrile affection, characterized by a local inflammation of the skin, terminating in desquamation, and accompanied by constitutional symptoms and the usual phenomena of blood-poisoning.

Causes.—The most influential factor in its propagation is contagion. It prevails in hospitals, and epidemics follow in the paths of armies. A peculiar poison, it is assumed, enters a wounded surface, and, after a certain period of incubation, the phenomena of the disease follow (Trousseau). Nevertheless, the disease has been divided into two classes—*idiopathic* and *traumatic*—the former arising spontaneously, the latter in connection with a wound. That this distinction must still be maintained is probable, because there are many cases of erysipelas for which there is no traumatic cause, and which must be, therefore, idiopathic. It is asserted that women are more susceptible to the poison than men; but later researches have shown the incorrectness of this statement. It is a disease of all ages, but is rather more usual from the twentieth to the forty-fifth year of life. It occurs at all seasons, but is more prevalent during the variable weather of winter and spring. The author has witnessed two epidemics of erysipelas and puerperal fever, occurring together, and acting apparently in substitution.

Pathological Anatomy.—The whole thickness of the skin is involved, and the inflammation extends through to the subcutaneous connective tissue. The derma is bare by exfoliation of the epidermis and uppermost cells and the papilla; and the connective tissue, with the sweat and sebaceous glands, is œdematous and infiltrated with

white blood-corpuscles in great numbers. By the accumulation of cells an abscess forms at the summits of the papillæ. As soon as the redness in the skin subsides, the cells thickly distributed through the subcutaneous tissue undergo a granular disintegration; a portion of the detritus thus produced enters the lymph-vessels, and the rest is absorbed, leaving the skin normal. Various changes have been reported as occurring in internal organs; but little definite information exists in regard to them, except granular degeneration of the heart and vessels, the liver, kidneys, and spleen, which appears to be definitely established. The blood seems to be much changed, but the reports are not uniform as to the character of the alterations. Bastian has ascertained the existence of capillary embolisms of the cerebral vessels, in some cases of death, from erysipelas of the face.

Symptoms.—Like the other eruptive fevers, erysipelas sets in by a stage of invasion. The initial symptom is a chill, although not usually a violent chill. Headache, often of an intense character, comes on with the fever; and there are nausea, bilious vomiting, and entire loss of appetite. Before the eruption appears, and thus directing the diagnosis, some of the cervical lymphatics, or the submaxillary gland, swells—the former when the erysipelas appears on the head, and the latter when it attacks the face. That this sign shall be available, the initial stage must be longer than a half-day. A sense of heat and tension is felt in the skin which is about to become inflamed. A patch of redness appears, and at several points, which coalesce and thence spread widely. The red color disappears on pressure, to be quickly restored; but, when the red disappears, a yellowish rather than white hue is seen. The skin, inflamed, is also œdematous, and it presents a tense, shiny appearance. The redness may commence at any point on the face or scalp, but it usually takes its origin from some accidental abrasion or from a pathological lesion, as a patch of eczema, or impetigo, etc.; and, when not initiated by such cause, it is apt to begin at or near one of the cavities opening externally—at the mouth, nose, or meatus auditorius. It was the opinion of the late Dr. Todd that many cases of erysipelas begin in the fauces and spread thence to the lips and elsewhere. The appearance of the eruption is accompanied by a sensation of heat, burning, and tension, and sometimes there is acute pain in the affected part. Where the parts are lax, and the exudation has room, there is less pain, and the swelling, therefore, is inversely as the pain. When there is great distention, and also abundant and rapid exudation, the epidermis is raised into blisters of varying size, according to the state of the skin. These blisters contain a transparent serum; sometimes they are reddish from the presence of blood, or yellowish from the number of pus-corpuscles, and they contain great numbers of bacteria. Where the cellular tissue permits, the swelling may be enormous, and the head and face so trans-

formed that not a single feature is recognizable ; the eyes can not be opened, the nose is closed, and the lips so stiff and swollen as scarcely to permit of feeding. The inflammation reaches its highest point on the second or third day, when the retrograde process begins, and on the fourth, fifth, or sixth day the redness is fading and the color is becoming yellow, and less and less swelling is noted. The blebs dry into yellow scabs or crusts. Suppuration may take place at various points after the termination of the inflammation in the skin, but the pus is usually absorbed without difficulty. Desquamation of the epidermis takes place over the whole area occupied by the inflammation, and the hair drops out, to be, however, quickly reproduced. During the maximum of the inflammation the scalp is very tender, and much pain is experienced wherever the head rests. The great peculiarity of erysipelas is its migratory character, spreading widely from the point where it first appeared to distant parts of the body. The margin of the redness is not sharply defined, but the swelling forms an abrupt ridge. The diffusion of the inflammation is not a mere chance, but pursues its course along the lines of least resistance, as determined by the arrangement of the fibrous-tissue bundles. The opinion of Todd, that erysipelas may start from an inflammation of the fauces, is supported by Trousseau and other authorities, and the erysipelas may extend downward into the glottis. The mucous membrane may also be attacked secondarily by extension of the inflammation from the skin. A heavily coated tongue, whitish or yellowish-white, becoming blackish, and ultimately peeling off in large flakes, is the condition of this organ. There are usually much nausea, protracted vomiting, entire loss of appetite, and excessive thirst. The intestinal evacuations may be normal, or diarrhœa may be present, or black, foul-smelling, unhealthy discharges may occur. Ulcerations of the duodenum, and consequently intestinal hæmorrhage, are by no means uncommon. The urine may contain albumen and casts, and indeed a small quantity of albumen seems an invariable result ; hence uræmia, with all its possibilities, may enter into the symptomatology of erysipelas. There are few cases of severe erysipelas without some transient delirium. Often there is active delirium during the highest point in the case. There are three chief sources of the delirium : cerebral anæmia, a reflex result of the cutaneous inflammation ; alcoholic excess ; thrombosis of the capillaries, or sinuses. The two first named may or may not be important ; the last is probably always fatal. Fortunately, it is rare. It was Bastian, we believe, who first pointed out the capillary thromboses resulting from facial erysipelas. The explanation is afforded by the intimate anatomical connection of the facial vein with the pterygoid plexus and cavernous sinus. Delirium is also a result of continued high temperature, but more especially a result of a combination of high fever with cerebral anæmia, the patient one who had been

addicted to alcoholic excess. At the onset of the inflammation the fever may reach 104° or 105° Fahr. The type of the fever is remittent, and a rapid defervescence ensues usually about the fourth, fifth, sixth, or seventh day ; but this defervescence is determined by the cessation of the inflammation in the skin. If the eruption continues to spread, there will be fluctuations in the temperature corresponding to the varying condition of the skin. The pulse varies accordingly and ranges from 100 to 140.

Course, Duration, and Termination.—Erysipelas corresponds to the other eruptive diseases, in its tendency to spontaneous cure at a certain period, but this is less certain, owing to its erratic course over the skin. The usual duration is from one to three weeks, but it may continue much longer when it tends to spread over a large part of the integument. When it ceases, in that which may be regarded as the typical mode, on the fourth, fifth, or sixth day, by a rapid defervescence of the temperature, there often occurs some critical evacuation—a profuse sweat, free intestinal movements of a very offensive character, or a large urinary evacuation ; but these critical phenomena are not always present. Primary or idiopathic erysipelas, notwithstanding the horrible aspect presented by the patient and the occurrence of considerable delirium, usually terminates in recovery. The convalesence is rather tedious because of the low condition to which the patient is reduced, even in favorable cases. There are dangers, fortunately rather rare, which attend the primary form of the disease—the occurrence of thromboses, capillary or of the sinuses ; the formation of ulcers in the duodenum ; the extension of the inflammation to the fauces ; and the depression of the powers of life, which may coincide with the sudden defervescence of the temperature. The traumatic form is more serious, because the erysipelatous inflammation is added to the complications of the injury. Furthermore the local hygienic conditions surrounding the wounded are favorable to the development of serious complications. Erysipelas coming on during convalescence from such serious diseases as typhoid, pneumonia, diseases of the heart, diabetes, etc., is always a very dangerous malady. On the other hand, important complications may arise during the course of an ordinary erysipelas. Thus a pneumonia, pleuritis, peritonitis, or meningitis, may arise by extension of the disease. Although the connection between the external malady and the disease within can not always be traced, it probably exists. Finally, an attack of erysipelas may terminate in pyæmia.

Diagnosis.—Erysipelas may be confounded with erythema, urticaria, and with phlegmonous erysipelas. Erythema is a superficial redness without inflammation—without heat and swelling—is without fever, and does not desquamate. Urticaria occurs in the form of wheals that itch a good deal and disappear in a few hours. Phlegmonous

erysipelas, so called, is a deep-seated inflammation, with suppuration, spreading along the connective tissue and by the intramuscular planes from a wound or injury, and does not take the course along the integument as erysipelas. So characteristic are the appearance and behavior of erysipelas that it would seem impossible to mistake it for any other disease. The diagnosis by anticipation should not be overlooked—the occurrence of enlarged lymphatics in the neck in the case of erysipelas of the scalp, and of enlarged submaxiliary glands in the case of erysipelas of the face.

Treatment.—The perturbating treatment formerly used is now no longer employed. The mildest cases require only a laxative, a suitable diet, and the local application of some vaseline to abate the heat and burning. In the more severe cases there can be no doubt of the value of quinine, especially if combined with belladonna. To avoid the complications which may arise in even simple cases, the author gives the tincture of belladonna, or preferably a solution of atropine (atropinæ sulph. gr. j, aquæ ʒ j. M. Sig. One drop every four hours in some water). As the effect of the atropine accumulates, the interval between the doses is enlarged. In the more severe cases quinine should always enter into the treatment, and in full medicinal not antipyretic doses (℞ Quininæ sulph. ʒij, ext. belladonnæ gr. iij. M. Ft. x pil. Sig. One every four hours). The delirium of anæmia, the usual form, especially in those addicted to alcoholic excess, is best relieved by alcoholic stimulants, and morphine and belladonna, if the latter does not enter into some other combination. The systematic use of milk and beef-essence is necessary in all severe cases, especially under the conditions named above. Tincture of chloride of iron, in half-drachm doses every four hours, is much commended by the English physicians, and with good reasons. In traumatic erysipelas Mr. Higginbotham's mode of applying a solution of silver nitrate in nitric ether is most serviceable. The surface must be carefully washed and dried. Then the following solution is brushed over the inflamed area, and for a short distance beyond on the healthy skin. On drying, should any part of the skin appear untouched, the solution is reapplied to these parts. The usual strength is about as follows: ℞ Agenti nitrat. ʒj, spts. ætheris nitrosi ʒ ij. M. Sig. Apply with a brush. An aqueous solution of two drachms to the ounce may be employed instead. The topical applications recommended are almost innumerable—a fact which indicates the uncertainty of value of any article. As a rule, irritating applications do more harm than good. To this dictum must be excepted the application of nitrate of silver, in the traumatic form of the disease. The author has seen murcurial ointment, diluted ten times with lard, very successful. Probably still better is the following: Vaseline ʒ j, acid. carbolic. ʒ ss., or less, which should be brushed over the inflamed area three or four times a day. Above all remedies and

applications is the use of a nutritious diet. From the very beginning systematic feeding should be carried on. When the patient can retain nothing else, lime-water and milk may be retained. But, when the stomach becomes quiet, milk, eggs, animal broths, etc., should be given at regular intervals, and, when necessary, stimulants. Trousseau (*op. cit.*) used no remedies except a laxative, but he pushed the administration of food, and of the great number of cases treated by him only three died.

FEVERS.

TYPHOID FEVER.

Definition.—*Typhoid fever* is an acute febrile affection, self-limited, feebly if at all contagious, and characterized by a peculiar eruption on the abdomen, by a form of diarrhœa, by stupor and low delirium, by thickening and ulceration of Peyer's patches, by infiltration and softening of the associated mesenteric glands, and by swollen spleen. Various names have been applied to this disease. In Germany * and France,† and on the Continent generally, it is now called "abdominal typhus"; in England and this country it is usually designated *typhoid*—rarely *enteric fever*, the term which was originally proposed by the late Professor George B. Wood. Notwithstanding the term *typhoid* is excessively faulty, it is so universally used in this country that the author has adopted it.

Causes.—Typhoid owes its origin to a peculiar poison, whose source and nature have thus far eluded investigation, but is associated with the decomposition of animal matter under certain conditions. It is never produced by mere decomposition of animal matter, fæces, or the contents of sewers; it is essential to the formation of the poison that the typhoid germ be present, and this germ finds in these decomposing animal matters a suitable soil for its growth and development. It does not originate *de novo*, but there must be present some typhoid matter furnishing the material for a new growth. There are sound reasons for concluding that the poison is contained in the excrements, but it seems necessary for some change to go on in them to develop the activity of the poison, for when in the fresh state they manifest

* "Handbuch der Pathologie und Therapie des Fiebers," von Dr. C. Liebermeister, Leipsic, 1875, p. 690.

† "Traité de Pathologie Interne," par S. Jaccoud, Paris, 1871.