

to a certain extent by the secretions of the streptococci (antitoxin?), which may increase the resistance of the body or tissues to the poison of the infection.

The ordinary duration of erysipelas varies from a few days to two or three weeks, according to the extent to which it spreads over the surface of the body. The tendency is notably toward recovery, but occasionally patients succumb from exhaustion, from the systemic poisoning caused by the toxins of the disease, or from meningitis, when the infection extends to the membranes of the brain, from the ear, the lining of the nose, or the frontal sinus.

Erysipelas of the new-born is generally acquired by infection from the navel, and usually leads to a fatal result.

The curative influence of erysipelas when it occurs in the course of other diseases has been already noticed. Chronic inflammations of the skin, particularly those of a tuberculous or syphilitic character, have been reported as benefited by an intercurrent attack of erysipelas, after resisting all other modes of treatment. Sarcoma and carcinoma have also been relieved or cured by the same influence.* Old and refractory neuralgias have often been cured or greatly relieved through the same means. In the insane, likewise, a temporary improvement has occasionally been observed.

This effect is supposed to be due to a change in the nutrition of the cells of the morbid tissues, or to a direct destructive influence upon the elements of the foreign growth by the micrococci of erysipelas. This ingenious theory needs the support of more extensive observation for its entire confirmation. At the present time one would naturally hesitate to employ so serious a measure as the voluntary infection of the system of a human being with the virus of erysipelas for a doubtful therapeutic purpose.

In like manner, the effusion of fluid within the thorax, following an acute attack of pleurisy, has been observed rapidly to diminish, and at times to undergo complete absorption, as a sequence of an invasion of the skin of the chest and trunk by erysipelas.

TREATMENT.—The treatment of erysipelas is chiefly to be directed to the complete isolation of the patient from all other sick persons, and the employment of all possible means for the establishment of good sanitary conditions about the patient. This includes scrupulous cleanliness, pure air, pure water, sunshine, and the rigid antiseptic treatment of existing wounds or other lesions. The local symptoms may be treated according to the varying requirements of the case.

The most rigid prophylaxis should be carried out; the patient should be isolated, and all possible means be employed to restrict the spread of the disease by soiled dressings, infected linen, or other articles. All these things should be burned at once.

The general treatment is the same as that commonly employed in other infectious maladies. The large number of remedies which have been recommended for erysipelas may be of service in ameliorating certain symptoms, but they are in no sense specifics for this disease. Aconitine (crystallized), in doses of 0.25 mgm. every six hours, or 0.1 mgm. every two hours, has been thought to reduce the duration of the disease and to alleviate the pain.

As regards the local treatment there are various procedures which may be used to advantage. Compresses dipped in some lotion of a cooling nature and applied to the inflamed skin usually afford considerable relief. Painting the part with tincture of iodine, with nitrate of silver, with carbolic acid in weak solution, or with corrosive sublimate in dilution of one-tenth of one per cent., has proved helpful in certain cases. Favorable results have been obtained by spraying the affected surface with a solution of corrosive sublimate in ether, in similar dilution. Under treatment of this kind the disease has apparently ceased to advance, and the inflammation has

* See the various contributions to this subject by Dr. Coley and other investigators.

subsided in from twenty-four to forty-eight hours. Painting the borders of the affected area and the sound skin adjacent to it with contractile collodion has been a most prompt and satisfactory method of treatment in the hands of the writer, the disease seldom crossing the line of collodion; or if it has not been entirely subdued by the first application, it has generally yielded to a renewed and more extended "fencing in" by the same means.

Subcutaneous injections of carbolic acid have been highly recommended as an almost specific treatment for erysipelas, and often its use in this way has been followed by the most favorable results. The frequent application of carbolized oil relieves the sensation of burning and stiffness, and is generally very soothing in its action. White paint has been used in the same way. Frequent or sudden changes of temperature in the sick-room should be avoided, and if a "cold" is contracted it is liable to aggravate the inflammation.

When sloughing or gangrene occurs, the case must be treated according to general surgical principles—*i. e.*, by free incisions, drainage, etc.

Cool baths may be employed for the purpose of diminishing the general temperature of the body, and the internal administration of the salicylates has sometimes been of service in accomplishing the same result.

Treatment by large doses of tincture of the chloride of iron (twenty to sixty drops in water at intervals of three to six hours) was at one time highly esteemed as almost a specific in erysipelas; but its use has been almost discarded since the increased knowledge of later years as to the nature of the malady, and the introduction of antiseptic methods in its management. Many other forms of drug treatment have been abandoned for the same reason, and to the great advantage of the patient.

In the phlegmonous form of erysipelas it is important to recognize suppuration as early as possible. It is in these cases that prompt surgical interference may be productive of the best results. The tendency of the infection to spread along the spaces separating the bands of loose connective tissue must be corrected promptly, no matter how long or how numerous the incisions may have to be. Very hot and large antiseptic poultices are now indicated, and they should be often changed. The graver forms of gangrenous erysipelas with malignant oedema should be dealt with promptly and heroically by long and deep incisions. Many a life has been saved by the timely action of the surgeon.

In phlegmonous erysipelas of the face, pus often forms in the tissues of the orbital cavity, necessitating incision between the eye and the orbital margin. In scrotal erysipelas of a phlegmonous or gangrenous character, a free incision should be made through the raphe, completely dividing all the tissues involved. This incision usually results in the prompt arrest of the inflammatory process, and the wound generally heals rapidly.

During the period of convalescence the treatment should be tonic and supporting; and care should be taken to avoid chilling of the surface of the body and fatigue. So long as desquamation lasts isolation should be continued, and in private practice the patient should not be allowed to mingle with other members of the household, particularly during periods of epidemic disease, until it is tolerably certain that the micro-organisms of the disease have been completely eliminated from the system.

Cases of this disease should be visited by the surgeon after he has seen all other patients, and the hands and instruments should be thoroughly cleansed and disinfected afterward. The patient should not be considered safe from a recurrence of the disease, nor should the precautions against infection of other persons be relaxed, until the disease has entirely disappeared from every portion of the body which was at any time invaded; and the danger of a relapse or of communicating the disease to others is not entirely absent until the process of desquamation of the epidermis in the regions affected by the erysipelatous inflammation has been completed. When the skin has fully returned to its normal condition, it is advisable that the entire surface of the body should

be carefully bathed in warm water, made alkaline by means of sodium bicarbonate and perceptibly impregnated with carbolic acid. A complete attire of fresh and uninfected clothing should replace the clothes previously worn. The patient may then be allowed to go at large.

One of the remoter dangers associated with erysipelas,—a danger, however, which is not of frequent occurrence—is an interference with the function of the kidneys. This complication may assume a variety of forms, and its presence as a complication of the erysipelatous process is of sufficiently grave importance to make the daily examination of the urine advisable. The renal condition often seems due not so much to the specific character of the erysipelatous infection, but rather to the action of the toxic products of the bacilli which accompany the graver forms of the disease. Should this or any other unusual complication arise in the course of erysipelas, the same rules should be observed and the same measures adopted as in other cases of similar disturbance of these important organs. The strength of the patient should be carefully husbanded, and tonic measures should be cautiously employed to support the system until the natural vigor shall have been re-established. For this purpose the diet should be carefully selected, and should consist of nutritious but unstimulating food, with the addition of some of the artificial digestive ferments if the functional ability of the alimentary organs has been seriously impaired. A very excellent addition to the ordinary diet of a weak and debilitated patient is the extract of malt in some of its more acceptable forms. Perhaps the best preparation at present for this purpose is that known as "Amé," or the Japanese extract of rice. It is of pleasant taste and possesses great nutritive power.

To overcome the debility often remaining after a prolonged attack of erysipelas, a change of scene and climate is often of great service. Excessive fatigue or prolonged bodily exertion should be prohibited, and the patient should be directed to pass a portion of each afternoon in a reclining posture, and if possible to obtain an hour's sleep in the middle of the day. In cases in which the attack of erysipelas is followed by the formation of abscesses, a sojourn at some of the watering-places, particularly at one of those whose waters are of an alterative and chalybeate character, is often of much benefit.

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ERYTHEMA.—The term erythema is a general one for certain diseases of the skin in which there are evidences of hyperæmia and passive inflammation.

Erythema simply means redness, and is therefore nothing more than a symptom, and, used without a qualifying adjective, has but little definitive value.

The definition of erythema, as given by some authors, is "a localized congestion, accompanied by redness, which disappears under pressure."

Two divisions of the subject are usually made, *viz.*, Erythema hyperæmicum and Erythema exudativum; these are again subdivided according to symptoms.

The first general division, **ERYTHEMA HYPERÆMICUM** or *Simple Hyperæmic Erythema*, is that form of the disease which is characterized by various-sized and various-shaped points and patches of redness, exhibiting no evidences of inflammatory exudation.

The patches readily disappear upon pressure.

The causes of the affection are numerous: heat, cold, the presence of irritating substances, as well as certain general systemic disorders.

It occurs both idiopathically and symptomatically.

The *Idiopathic Hyperæmic Erythemas* are those which are produced by cold or by heat, by traumatism, or by the application of some irritant to the surface of the body.

If the skin be exposed to any of these agents for a great length of time the condition passes from the simple hyperæmic into the exudative stage. Slight sunburn is perhaps the mildest type of hyperæmic erythema. Artificial heat may produce the same condition (*Erythema ab igne*).

Cold will also produce a certain amount of congestion (*Erythema pernio, chilblain*).

Wounds and contusions, pressure of clothing or bandages, also cause a localized erythema.

Exposing the skin to irritating substances, as mercury, iodoform, certain dye stuffs, or poison ivy can cause an erythema.

The *Treatment* for simple erythema is upon general lines. If it is caused by pressure of clothing or from the chafing of two opposing skin surfaces (*Erythema intertrigo*), remove the pressure and apply some soothing dusting powder.

If it has become almost eczematous in character, and the diseased area is covered with a sticky exudation, as is often the case in infantile intertrigo, Lasar's paste, calamine lotion, made with the stearate of zinc instead of the oxide, or any of the other external applications for eczema, are indicated.

If the erythema is from the external application of drugs, the treatment is obvious; remove the cause.

The *Symptomatic Erythemas* are important, because they so often simulate more serious affections. They generally occur as the result of some derangement of the digestive tract, and are more frequently seen in children or young people. They may also accompany certain systemic diseases, such as diphtheria, scarlet fever, cholera, uremia, Bright's disease, etc.

The eruption may be found on any portion of the body, although the face seems to be the part most frequently affected. The lesions appear in various shapes; patches, spots, rings, etc., small reddish pea-sized spots called *roscola*, are often seen in the beginning of a syphilitic rash, smallpox, or as an accompaniment of vaccination, and in some cases of jaundice.

The persistent or fugitive flush seen in rheumatism, asthma, goitre, hemiplegia, is an erythema produced by some impairment of the central or peripheral nervous functions.

The symptomatic erythemas occur in both the hyperæmic and the exudative varieties; and, as they are more frequently observed after they have passed into the inflammatory stage, to save space they can be more conveniently discussed here, before considering the distinct group of erythema multiforme.

Erythema Diphtheriticum.—During an attack of diphtheria, especially if severe, there often occurs upon the thorax and abdomen a diffuse eruption, sometimes extending over the extremities; it may be mottled, punctate, or scarlatiniform in character. The rash usually appears on the second or third day of the disease and should be distinguished from the toxic maculo-papular erythema multiforme which appears late in the course of diphtheria.

Since the introduction of antitoxin as a therapeutic measure a form of erythema has been noted; it occurs chiefly on the trunk, making its appearance from six to twenty-four hours after the injection. This epiphenomenon is regarded by bacteriologists to be due to some idiosyncrasy of the horse from which the antitoxin is taken and not to any defect of the preparation itself. This erythema is not of any grave importance, but is a disagreeable accompaniment of the most effective therapeutic measure in the treatment of diphtheria.

Erythema Cholericum.—This is a polymorphous, maculo-papular erythema seen in some cases of cholera. The eruption first appears on the hands and feet, extending to the forearms, legs, and trunk, and finally to the face. It usually begins early or late in the disease, lasts several days, and disappears by desquamation.

The erythema of *Uremia* is of the maculo-papular variety. The first lesions are bright red macules which rapidly change into papules, and are generally upon the extensor surfaces of the hands, forearms, and legs. The

eruption may extend over the body, even involving the palms and soles; it runs its course in three or four days and subsides with flaky desquamation. When this cutaneous manifestation is seen as an accompaniment of nephritis the prognosis is grave.

In *Chronic Bright's Disease* the erythema consists of bright red macules, generally situated on the trunk, although the neck, arms, and thighs may be involved, and more rarely, the face, hands, and feet; it is accompanied by no subjective symptoms and lasts but a few days.

There is another eruption seen in Bright's disease which is papular throughout. This, I think, is the commoner form. The lesions are large, discrete papules, of a dark red color, generally springing from dry, rough, or scaly patches. The outer side of the thighs and extensor surfaces of the legs and arms are the parts involved.

Erythema Scarlatinoïdes.—In 1851 Hardy described a cutaneous roseola which closely resembled scarlet fever. He named it *Erythema scarlatinoïdes*. Later, Bazin reported similar cases; he applied to them the term *erythema scarlatinoïforme*. Still later, Besnier gave the disease careful clinical and histological study, and from his researches he considered the proper name to be the one first given by Hardy.

Its close resemblance to scarlet fever makes it a disease of considerable importance.

The eruption comes on with slight constitutional disturbance and with more or less elevation of temperature; its advent may be sudden or gradual; it appears first on the chest, as a bright red punctate erythema, and from here eventually spreads over the entire body. Cases have been reported in which it appeared as a diffuse general rash. It is often accompanied by burning and itching; the duration, in either case, is short; it soon becomes pale, and in a few days passes off with little or no desquamation. If, however, the attack has been severe, the desquamation may be considerable, the epidermis shedding itself in large patches.

The disease has no specific infectious origin; it is neither contagious nor transmissible. It differs from scarlatina in the absence of the characteristic strawberry tongue and the typical throat symptoms.

Gastric and intestinal disorders seem to be the prominent causative factors. According to the reports the disease has been observed during the puerperal period and as a symptom of septicæmia. It has also been observed in typhoid fever; in which disease it usually occurs at the end of the first or at the beginning of the third week of the fever.

The external application of drugs, such as mercury or iodoform, has been known to produce the eruption.

In treating the disease such measures should be adopted as the symptoms demand.

Erythema Scarlatinoïdes Recidivans.—This is a variety of scarlatinoïform eruption that tends to relapse, each attack clearing up with considerable desquamation. The disease has been described by the French authors, and many American dermatologists have also reported undoubted cases of this affection.

The term desquamative relapsing scarlatinoïform erythema is the name by which the disease is now known. Some of the French writers consider it different from *Erythema scarlatinoïdes* because of its extremely inflammatory character, and have suggested the term *Dermatitis scarlatinoïformis*.

The symptoms as given by Besnier are as follows: It often begins with shivering, lassitude, sore throat, headache, and elevation of temperature. When the rash is at its height the fever will suddenly cease. The eruption lasts for from four to six weeks, and is similar to that of scarlet fever.

Desquamation often begins on one part of the body while the efflorescence is present on others.

The etiological factors are numerous: it may be due to external or internal causes; it has been observed in certain diseases such as rheumatism, gonorrhœa, toxæmia, etc.; mercury, quinine, belladonna, antipyrin are among the drugs which produce this variety of erythema.

One attack predisposes to another, recurrences usually taking place at the change of seasons. While any of the foregoing factors may produce an attack, yet what induces an outbreak in one person will not in another, and attacks in the same subject may be brought about by entirely different causes.

It has been observed that each subsequent manifestation of the disease tends to become milder.

In making a diagnosis, erythema must be differentiated from scarlet fever, which disease it most closely resembles. The principal points to be remembered are: while there may be sore throat at the beginning of the attack it is not so severe as that of scarlet fever, the strawberry tongue is not present, the temperature abates during the height of the rash, the duration of the disease is more variable and prolonged, and, finally, it is non-contagious and tends to relapse.

Erythema Perstans.—This is a type of erythema which has many of the eruptive characteristics of *Erythema scarlatinoïforme*, differing in that the rash may persist for weeks, months, or longer. The eruption is symmetrical and is attended by severe subjective symptoms, as pain and itching.

The treatment of this group of erythemas depends largely upon the cause; if it is due to some systemic disease, treat that, or if to external irritation, remove the irritant. Locally, soothing applications will be found useful.

In the perstans variety, Duhring recommends the exhibition of quinine, sodium salicylate, or ergot in full doses.

ERYTHEMA EXSUDATIVUM MULTIFORME.—The affections grouped under this general head are characterized by inflammatory changes in the skin, and are in contradistinction to the simple congestive or hyperæmic erythemas. As the name implies, the lesions are multiform, and the symptoms and etiology are varied. The French term it *Erythème polymorphe*. The general type, *erythema multiforme*, was clearly described by Hebra; since then the question is constantly brought up whether many of the cutaneous manifestations grouped under this head are not really distinct diseases.

It is an inflammatory affection characterized by reddish or variegated macules, papules, and pustules. The eruption occurs either discretely or in patches, with sharply defined, marginate outlines, and runs an acute course. The patches may be simply erythematous or may consist of maculo-papules, papules and vesicles, and, in some instances, of vesicles and blebs.

The lesions pass rapidly through their various evolutions: first, the erythematous patches are red and clearly defined from the surrounding skin; in a few days they begin to assume a purplish or bluish-white color, which disappears upon pressure.

The various shapes, colors, and character of the patches have given rise to the terms *circinatum*, *annulare*, *papulosum*, *iris*, *marginatum*, *purpuricum*, *urticans*, etc.

The eruption which fades in the centre and extends peripherally is termed *circinatum*. If there are a series of concentric rings formed it is called *Erythema annulare*.

Erythema iris is a rare manifestation of *Erythema multiforme*, and has been described under various names, such as *Herpes iris*, *hydroa*, *Herpes circinatus*, etc.

Two varieties are most frequently seen: in one the lesions are vesicular and bullous, arranged in clusters and rings; in the other they are vesicular throughout. The degree of redness is marked, assuming in most cases many hues, from which comes the term *iris*.

The eruption is generally located on the backs of the hands and feet, although it may invade other parts of the skin, even the mucous membranes.

Marginate erythema is simply that form in which the margin is sharply defined. The gyrate and figurate forms are those in which the patches and circles merge together and form fantastic shapes.

Papular erythema is the name given to the disease when the patches consist of papules or maculo-papules.

If the erythema is complicated with cutaneous hemor-

rhages it is called *Erythema multiforme purpuricum*; if with urticarial wheals, *Erythema multiforme urticans*.

Erythema multiforme attacks by preference certain regions of the body; the backs of the hands, forearms, and legs being the localities generally invaded. In some cases the face may become involved. The eruption occurs symmetrically, and the outbreak usually begins first on the hands and fingers. If it attacks the face the first lesions are seen on the forehead.

Cases have been recorded in which the eruption involved the whole cutaneous covering, beginning in the favorite locations and spreading over the entire body, finally resolving by exfoliation. The disease, in these instances, closely resembles *Dermatitis exfoliativa* (see *Erythema scarlatinoïforme*).

The subjective symptoms are mild, and the patient may complain only of slight burning and itching. The systemic symptoms are variable; frequently there will be considerable eruption over the hands and feet, with no general discomfort. Again there may be a marked elevation of temperature, preceded by malaise, headache, rheumatic-like pains, sore throat and swelling of the joints.

Gastric and intestinal derangements have been noted in the severer cases.

The evolution of the disease is varied. Often erythema will be the only eruption observed throughout the whole attack, while in other cases there will be vesicles or aborted vesicles. Again the lesion may be maculo-papular. Sometimes the patch will clear in the centre and form opalescent rings. In the more serious cases there may be a diapedesis of blood in the skin. If this is great enough to form distinct purple spots, it is a question if the disease is not *Purpura rheumatica*, and not a true *Erythema multiforme*. It is now almost the universal belief that in its etiology and pathology *Erythema multiforme* is closely allied to the cutaneous lesions of rheumatism. *Erythema multiforme* is a disease of spring and autumn, although it may occur at other times of the year. Humidity or dampness seems to favor its development. Women, especially young women, are more subject to it than men.

Pathologically it is an angioneurosis, the effect being primarily upon the nerves, secondarily upon the blood-vessels. It is believed by many authorities to be of an infectious nature, although opposing theories appear to be equally well grounded in fact. Cases have been reported of nervous shock followed by an erythematous outbreak.

Microscopical examinations of the lesions show a dilatation of the vessels of the stratum corneum and some exudation of white corpuscles.

Recent observations have not been able to demonstrate the presence of emboli in the cutaneous vessels, although some pathologists claim to have found them.

The *Diagnosis* of the disease is comparatively easy, providing the multiform character and peculiar color of the lesions are borne in mind. The presence of the lesions upon the hands and feet, and the almost total absence of itching will serve to distinguish it from urticaria.

In papular eczema the papules are smaller and intensely itchy. The course and symptoms of pemphigus will aid in diagnosing it from the bullous form of erythema.

Erythema nodosum will be known from *Erythema multiforme* by the presence of bluish nodes on the extremities. The differential diagnosis between *Erythema multiforme* and *Dermatitis herpetiformis* is more difficult to make. Careful study, alone, makes differentiation possible. Limited space will allow only a brief outline here. *Dermatitis herpetiformis* is a chronic disease, and tends to relapse, each recurrence showing the herpetiform character of the lesion; *Erythema multiforme* is an acute disease, occurring as a rule in the spring and fall, and while in some instances the lesions may be herpetiform, they always present more or less multiformity.

The *Treatment* of *Erythema multiforme* should be on general lines. At the beginning of the attack a saline purge is indicated; the diet should be light and nutri-

tious; stimulants of all sorts should be avoided; anti-rheumatic remedies, such as the salicylates, appear to give the best results. In the relapsing cases quinine and iron should be used. Astringent washes, such as lead lotion, will be found useful in treating the skin lesions. If there should be itching a weak solution of carbolic acid or menthol will give relief. Some authors recommend various pastes containing a small per cent. of carbolic acid, resorcin, or salicylic acid.

In the beginning of the disease the *Prognosis* as to duration should be very guarded, for relapses may occur that would prolong the attack indefinitely. Generally the disease runs a definite course, lasting from a month to six weeks, treatment seeming to have very little influence upon it.

ERYTHEMA NODOSUM is an inflammatory disease of the skin characterized by various-sized elevated nodes of a rosy red or purplish color.

The disease is generally ushered in with some systemic disturbance; there are malaise, fever, and rheumatic-like pains of the joints.

The nodes begin as dark indurated patches, they appear suddenly and rapidly arrive at full development. Various regions of the body may be involved, although the extensor surfaces of the arms and legs are the parts usually affected. The nodes differ in size from a filbert to a large English walnut. At first they are bright red, gradually growing darker until they become purple, finally fading to a yellowish-blue tint resembling the discoloration of contusions, which has given rise to the synonym *Erythema contusiforme*. Throbbing and pain on pressure are characteristic symptoms; frequently the nodes become so inflamed and shiny that they are mistaken for points of suppuration. The number of the nodes vary; sometimes they are limited to two or three, then again there are four or five times as many. They appear in successive crops, each crop being accompanied by more or less systemic disturbance. Cases have been reported in which there were diarrhœa, high temperature, and vomiting.

The cause of the disease is not clearly determined, although it is most frequently met with in the anæmic and weakly; good general health does not preclude an attack. Exposure to cold in some cases seems to provoke an outbreak. Females appear to be more subject to the disease than males—the proportion being about three to one. It is more frequently seen in early middle life, although I have observed it in people over fifty years of age.

The pathology is that of an exudative inflammatory process, similar to *Erythema multiforme*. Some authors claim it to be an inflammation of the lymphatics; others, that the nodes are inflammatory infarcts. Many competent observers consider it to be closely allied to *Purpura rheumatica*. The justice of the claim that it is of infectious origin merits more than passing notice; for if the course and symptoms are closely observed it will be found that it bears a marked resemblance to some of the infectious diseases; as for instance influenza.

There seems to be no doubt that *Erythema nodosum* is in some way closely allied to rheumatism, for the joint and muscular pains are quite similar, and heart involvement has been noticed during a course of the cutaneous disease. It is probable that when the bacteriology of rheumatism is more fully worked out it will be found that *Erythema nodosum* is due to the same or a similar organism.

The microscopical findings are similar to those of *Erythema multiforme*. The capillaries are dilated; there is an infiltration of blood cells into the derma, and the lymphatics are filled with cells. Competent observers have failed to demonstrate free cutaneous hemorrhages in the contused areas.

In diagnosing the disease care must be taken not to mistake it for bruises; it is sometimes diagnosed as erysipelas, especially if it occurs about the face. The nodes have been cut into under the impression that they were abscesses. The number and sites of the nodes will help to distinguish it from syphilitic gumma. Giant urticaria

differs from erythema in that it is never accompanied by rheumatic-like pains or by fever. The color of the lesions differs, the erythematous nodes are painful, while the wheals of urticaria are itchy. The course of the two diseases is dissimilar; erythema nodosum lasting two or three weeks, while urticaria disappears in a few days.

It might be mistaken for that rare disease Erythema induratum, but this affection runs a slow chronic course, generally terminating in ulcerations.

The distinguishing characteristics of phlebitis, lymphangitis, and Erythema multiforme should also be borne in mind.

Treatment.—The treatment is according to the symptoms. If there is much fever antipyretics are indicated. The bowels should be kept open and a simple diet should be prescribed. As regards the general therapeutics, the most reliance should be placed upon salol, salicylate of soda, or quinine; phenacetin, combined with any of the above, aids in relieving the muscular and joint pains. It is well to follow this line of treatment with liberal doses of iron and tonics, especially in weak females. External lotions of lead water and opium relieve the burning pain, or, if preferred, a ten to twenty-five per cent. ichthyol ointment can be used.

The prognosis is favorable; relapses are rare.

ERYTHEMA ELEVATUM DIUTINUM.—In 1894 Crocker described a disease to which he gave this provisional name. The eruption occurs in young girls of rheumatic history, and chiefly affects the hands, lips, knees, and buttocks. The lesions are pale, purplish-red in color, and in some cases are sharply defined, in others nodular and irregular in outline. They are firm to the touch and painful when pressed upon. There are few or no subjective symptoms. Cases have been reported in which there was considerable disfigurement from the eruption, the skin being so nodular and infiltrated. The lesions tend to persist, but may undergo gradual involution. Those that do remain become as hard as cartilage. Microscopically there are evidences of inflammatory processes followed by the production of fibrous tissue. It is undoubtedly a mistake to use the term erythema in this disease, for it does not properly apply to the condition, hypertrophic changes being the chief pathological element. The proper classification will be finally decided after further study, but until then it is as well to describe the disease under this caption as elsewhere.

ERYTHEMA INDURATUM, or Erythème induré des scrofuleux, is a disease first described by Bazin. It is a deep-seated nodular eruption situated in the skin over the legs and fingers.

The nodes vary in size, and are round or oval in shape; as a rule they are few in number, but cases have been reported in which they became confluent. They run an indolent course: some disappear by spontaneous involution, while others suppurate or become necrosed, forming deep circular ulcers. Pain, which may be present, is not severe. Young strumous girls with feeble circulation seem to be especially subject to the disease.

In diagnosing this disorder Erythema nodosum and syphilitic gummata must be thought of. It differs from Erythema nodosum in that the lesions are more circumscribed, firmer, and of a darker color; they are more deeply situated in the skin and less tender; they run a chronic course and tend to ulcerate.

Syphilitic gummata are not bilateral, and the patient gives no evidences of other specific symptoms.

Treatment consists of change of air, tonics, and rest in bed.

James Macfarlane Winfield.

ERYTHRASMA.—This is a cutaneous disorder rather than a disease of the skin strictly speaking, and is due to the presence and growth, on and in the superficial layers of the epidermis, of a vegetable parasite. The affection was first described by Burckhardt in 1859 and by von Bärensprung in 1862, who then named it. Later it was studied by Besnier, Balzer, Dubreuilh, Riehl, Crocker, and many others, who all agree that it is a distinct affection. It is an extremely rare though trivial affection; it

produces no inconvenience and is usually only accidentally discovered. During the past six years no instance of it has been noted in the dermatological department of the Vanderbilt Clinic, New York City, where the examinations, at least amongst the male patients, in whom it is said to be most common, is of the most open kind. The parts attacked are primarily those situations of the body—such as the axilla, the inguinal and genito-crural regions, and the cleft of the nates—where, the apposed surfaces of the skin coming in contact, warmth and moisture are most constant. To these situations the parasite may confine itself indefinitely, but sooner or later (if uninterrupted in its course) the growth spreads slowly to contiguous parts and the trunk and limbs become invaded. These parts, however, may be attacked independently. The affection first manifests itself in the form of macules of the size of a pinhead or in patches of a somewhat larger area, the lesions varying in color according to their age and location, but always presenting a sharp contrast to the color of the adjacent normal integument. The younger lesions are vividly red over their entire surface or at their borders only, where a slight elevation above the general surface, due to hyperemia and to the presence of a scanty desquamation, may be detected by the passing finger. The larger and older patches display varying shades of color ranging from a yellowish or light brownish tinge to deep orange, they are circular or rosette-shaped, or they have very irregular outlines. Vesiculation and papulation never occur and the only subjective symptom is possibly that of itching. It is the most chronic in its course of the dermatomycoses and lasts for months or years with but little change. Males are more frequently attacked than females; no case has been noted in childhood. Riehl's youngest case was sixteen years old, the oldest fifty-eight.

The fungus to which erythrasma is due was named by von Bärensprung the *Microsporon minutissimum*, the chief characteristics of which are the fineness of its threads and the minuteness of its spores. A power of six hundred diameters is required to make out the organism well. The threads present an inextricably interwoven mass with the spores scattered throughout in irregular clumps.

Erythrasma is chiefly to be distinguished from chromophytosis, but the different situations usually occupied by the former, its vivid coloring, and particularly the differences observed under the microscope are features sufficiently distinctive to enable one to make a positive diagnosis when in presence of one or the other affection. From chloasma, for which it might possibly be mistaken, it may be shown to differ by the ease with which erosion removes the superficial discolored epidermis.

The following simple plan of treatment will be found all-sufficient. After a preliminary hot bath, during which vigorous friction of the affected parts with scrubbing brush and soap has been maintained, a goodly proportion of the invaded epithelium will be found to have been removed, thus allowing a saturated solution of hyposulphite of sodium in water to do its work effectively. Afterward this solution should be dabbed on twice daily until the last trace of the parasite has been removed, for, as in chromophytosis, if this be neglected, even to the extent of overlooking so small a lesion as a pinpoint-sized macule, a starting-point will be left for reinvasion. Many other remedies are used. The list includes, sulphurous acid pure or dilute, a good remedy; a ten-per-cent. ammoniated mercury ointment; and ordinary sulphur ointment of the Pharmacopœia, to be well rubbed in. None of these, however, can be compared, as regards both cleanliness and effectiveness, with the hyposulphite of sodium treatment.

Charles Townshend Dade.

ERYTHROPHLEUM, ERYTHROPHLEINE. See *Sassy Bark*.

ERYTHROXYLON. See *Coca*.

ESCHSCHOLTZIA.—A genus (fam. *Papaveracea*) of ten or more species, of the western and southwestern United States and of countries lying farther southward

Medicinal properties have been credited to the *E. Californica* Cham., but this was at a time when most of the species were included under that name, so it is not now known certainly to which species (one or more) these properties were said to belong. The plants are very showy and are widely cultivated for ornamental purposes. The herb contains chelerythrine (see *Celandine*) and at least one other alkaloid, and a glucoside. The presence of a small amount of morphine has been claimed, but this is probably not justified. Mild analgesic and soporific effects are obtained from the use of the extract in doses of about 1 gm., which may be increased to three or four times this amount.

Henry H. Rusby.

ESPERANZA MINERAL SPRINGS.—Yates County, New York.

POST-OFFICE.—Pen Yan.

ACCESS.—By steamers on Lake Keuka or by a trolley line between Pen Yan, which is six miles distant in one direction, and Branchport, one mile distant in the other.

The springs are located at the head of the west branch of Lake Keuka, one of the most charming and picturesque of the many series of lakes which give the name of the lake section to this part of central New York. Lake Keuka is 700 feet above the ocean level, and within a mile of the springs an elevation of 1,100 feet higher may be reached. This is the great grape-producing section of New York, and the country about the lake is dotted on every hand with vineyards. Lovely walks, drives, and bicycle paths abound on all sides. The largest of the springs flows about one thousand gallons hourly. The water, which has a temperature of 51° F., has never been examined quantitatively. A qualitative analysis shows the following ingredients: Calcium carbonate, Calcium sulphate, Calcium phosphate, Calcium chloride, Magnesium chloride, Magnesium carbonate, Magnesium sulphate, Iron oxide (trace), Sulphuretted hydrogen gas, and Carbonic acid gas.

The water, when first taken from the spring, has both the taste and the smell of sulphur, but this disappears after a few hours, and the water becomes very palatable. There is no hotel at the springs, though there are many within easy reach. Lake Keuka is well supplied not only with hotels, but with cottages, steam yachts, sailboats, etc. No systematic effort has so far been made to put the Esperanza Spring waters on the market, although large quantities have already been sold.

James K. Crook.

ESTILL SPRINGS.—Estill County, Kentucky. These springs are located 40 miles west of Irvine. We are indebted to the United States Geological Reports for the following analysis, made by Dr. Robert Peter:

ONE UNITED STATES GALLON CONTAINS: *

Solids.	Red Sulphur Springs (near saloon).	Chalybeate Springs.
	Grains.	Grains.
Sodium carbonate	1.16	....
Calcium carbonate	11.66	9.32
Magnesium carbonate	4.64	2.93
Iron carbonate .....	....	1.75
Sodium sulphate	9.91	.58
Potassium sulphate	5.24	.58
Calcium sulphate .....	....	16.32
Magnesium sulphate .....	.58	9.91
Sodium chloride	5.24	.58
Alumina .....	....	Trace.
Silica .....	.58	1.75
Organic matter	2.33	8.16
Total	41.34	51.88
Gases.		
Sulphuretted hydrogen	0.26	....
Carbonic acid	18.98	15.68

* Converted from parts per 1,000.

† Alkaline calcic chalybeate.

The waters are principally of the light sulphuretted type, with one mild ferruginous spring. Another spring in the neighborhood, termed by Walton the "Irvine" Spring, is purgative, containing about 256 grains of sulphate of magnesium to the gallon. As far as we are able to learn, the place is not at present improved as a resort.

James K. Crook.

ETHER.—In medicine and pharmacy the word *ether*, unqualified, means, as it does in common parlance, the body *ethyl oxide* (C₂H₅)₂O, formerly, but improperly, called *sulphuric ether*. Ether is a product of reaction between sulphuric acid and alcohol, and is obtained by distilling a mixture of these two bodies, and purifying the distillate. Under the simple title *Ether*, Ether, the United States Pharmacopœia recognizes an ether of standard purity, "composed of about ninety-six per cent., by weight, of absolute ether, . . . and about four per cent. of alcohol containing a little water." This ether corresponds to what formerly was called *Ether Fortior*, Stronger Ether, a title abbreviated in the 1890 Pharmacopœia to the simple word "Ether."

Ether is "a transparent, colorless, mobile liquid, having a characteristic odor, and a burning and sweetish taste. Specific gravity: 0.725 to 0.728 at 15° C. (59° F.); or 0.714 to 0.717 at 25° C. (77° F.). Soluble in about ten times its volume of water at 15° C. (59° F.), with slight contraction of volume. Miscible, in all proportions, with alcohol, chloroform, benzol, fixed and volatile oils. Ether boils at about 37° C. (98.6° F.), and it should, therefore, boil when a test-tube, containing some broken glass and half filled with it, is held for some time in the hand. Ether is highly volatile and inflammable. Its vapor, when mixed with air and ignited, explodes violently" (U. S. P.).

Ether tends to decompose by prolonged keeping, developing, as one product, acetic acid. For use as an anæsthetic, ether ought to be pure and of standard strength. In all cases of suspicion, therefore, the surgeon should test his sample by the following simple procedures: 1. Let soak in the ether for ten minutes a piece of pale blue litmus paper, previously moistened with water; the paper should not redden, thus showing the ether to be free from acid. 2. Pour about two teaspoonfuls of the ether upon a piece of clean blotting-paper, free from smell, and let it evaporate; as the last of the ether is dissipated, no foreign odor should be perceptible on the paper, showing absence of impurities. 3. Saturate some water with the ether, and then shake together, in a graduated test-tube, 20 c.c. of such aqueous solution of ether with an equal bulk of the ether itself. Upon standing till the two fluids separate, the layer of ether should not measure less than 19.8 c.c., thus showing an absence of undue amount of alcohol or water—in other words, that the ether is up to standard in strength.

By reason of its extreme volatility ether is best kept in hermetically sealed tins. In bottles, whether cork- or glass-stoppered, leakage by evaporation is almost certain to occur, especially during transportation. Extreme inflammability is another property of ether requiring especial precautions in handling the fluid, and a point often overlooked is that air even moderately charged with ether vapor is explosive. Hence happens every now and then the ignition of an ether inhaler during anesthetization by the leap of fire through intervening ether-charged air from a candle, or hot cauterizing iron, several feet removed.

Ether is a conjoint local irritant and constitutional narcotic. Being of high diffusion power, it is readily absorbed by living tissues, and so speedily declares its influence. Applied in full strength to the skin, and prevented from evaporating, it quickly reddens, and in time will blister. Absorbed into the blood, ether disturbs nerve function by attacking first and more profoundly the nerve centres, and secondly, and with less intensity, the nerves themselves. Of the nerve centres, the cerebrum seems to be the most sensitive to the ether influence, the disturbance being first a conjoint excitation of