tried only in certain cases, because in pruritus vulvæ especially, owing to ready irritability of the vaginal mucous membrane, disagreeable inflammatory conditions may ensue. Hydrated alumina has sometimes done me good service in the following formula: ℞ Alumin. hydrat., 5 grams; Glycerini, Ol. olivar., āā 20 grams; Ung. moll., 40 grams. M. S. Ointment. Local douches and ablutions with tepid or cold water, vapor baths with decoction of hyoscyamus, suppositories of belladonna or opium are of but temporary benefit, yet can rarely be dispensed with, the affection being so stubborn as to frequently try the patience of the physician and his client severely. Thymol, 1; Glycerin, Alcohol, āā 20; water, 600–800, in combination with many of the above-mentioned remedies, often proved useful in my hands. In hystero-nervous subjects, potassium bromide, atropine, and arsenic may be given internally. The main thing is perseverence and patience on the part of the sufferer and the physician.

II. VASO-MOTOR SENSORY NEUROSES.

This class comprises a series of affections in which the disturbance of sensibility is less than in the above-mentioned diseases, but in which the influence and participation of the vaso-motor nerves produce pathological conditions on the common integument which are associated with fluxionary or inflammatory processes. We have stated in connection with the hyperæmias that all pathological alterations caused through the innervation of the blood-vessels are to be designated vaso-motor or angioneurotic affections, and in the same place we have discussed erythema hyperæmicum and roseola congestiva as cognate forms. We shall discuss here only those affections which cause prolonged alterations and are characterized, besides the fluxionary disturbances, by nutritive morbid processes. These latter manifest themselves by metamorphoses of tissue and simultaneous vascular disease. Erythema hyperæmicum, as an angioneurosis, by itself forms a clinical morbid picture in the same way as the polymorphous erythemata now to be considered.

Between these conditions, often representing merely transitional forms, there are certain affections which cannot very well be accepted as diseases of the skin, but only as the alterations projected on the common integument by the pathologically changed vessels; they are: angiospasm and angioparalysis which, under certain conditions, are followed by erythemata and even extravasations on the skin.

The pattern of the forms of disease to be discussed here is erythema multiforme; the other erythemata and the urticaria related to it form its natural sequence.

1. *Erythema Multiforme.*

Definition and Symptomatology.—Hebra has distinguished a series of erythemata, which he designated as caused by congestion, from the analogous slower forms which he considered as due to exudation; and, therefore, he called the latter, on account of the manifold character of the pathological form, exudative multiform erythemata. Hence, since the time of Hebra, the exudation formed the criterion for classing erythemata.

The generally short duration of the disease and the insignificance of the subjective symptoms have directed the attention of numerous physicians rather to the size and extent of the visible exudation than to the deeper nature of the malady; but careful observation and further experience have led us to take cognizance also of the concomitant and subsequent phenomena. The first to attract attention was the fact that erythema

does not always appear as a simple dermatonosis, but is often connected with fever and rheumatic pains, and stands in manifold relation to inflammatory conditions of the joints, as well as of the heart and pericardium; again, some observers found that this cutaneous disease at times is dependent upon disturbances of the nervous system.

In view of this twofold clinical character, it would be logical to change the term applied to this disease for each of these forms, especially that progressing with fever, and for this reason Lewin[1] has proposed to call the former "dermatitis exudativa." The same author has fully accepted the view previously expressed by Köbner[2] and Auspitz[3] that erythema is to be interpreted as an angioneurosis.

The opinion that erythema is a pyrexial affection analogous to the exanthematic conditions, has not been completely proven even by Lewin; for were we to designate the various stages of erythema as prodromal, eruptive, and desquamative—analogous to those occurring in variola or scarlatina—were we even to admit the infectious nature of the agent producing erythema, still the dissimilarity of the symptoms in the course of this disease is so marked that it cannot be brought in analogy with the typical and cyclical course of the other acute exanthemata, and the contagiousness which exists undisputed in the former cannot be demonstrated as a cause of erythema.

Therefore, if we consider erythema multiforme as the product of an affection appearing with various efflorescences, the basis of which is the patchy redness, the erythema, it is easily understood that Auspitz,[4] taking the redness as the starting-point of the pathological process, endeavored to group together all those diseases developing on this basis, at the same time giving this fundamental form the name erythanthema, *i. e.*, formation of efflorescence with an erythematous fundamental lesion. Among these erythanthemata Auspitz included all kinds of erythema, herpes and its varieties, peliosis rheumatica, certain unclassified forms of eczema, with some vesicular eruptions (!). Less correct nosographically, such a widening of the term would produce a separation of some types of disease which we at present are not yet able to disconnect from the patho-etiological conception. We, therefore, choose the older term, multiform erythema, but with this difference, that we eliminate the qualifying adjective exudative, in view of the pathogenetic condition, and prefer to speak of an angioneurotic and trophoneurotic erythema.

By erythema multiforme we understand a skin disease running an acute or subacute course, characterized by the formation of patches of a vivid red or dark color which are variously joined together; their size ranges from that of a millet or hemp seed to that of a lentil; they temporarily pale under pressure of the finger; they are often transformed into other efflorescences, and may occur on all or only on isolated parts of the body (dorsum of hand and foot). The patchy form constitutes the starting-point of the erythema. The circumscribed hyperæmia of the skin with which the affection begins lasts but a short time, becomes gradually more intense; the skin, originally flat and smooth, becomes somewhat firm, slightly swollen, and by infiltration and increase of tissue within the several efflorescences the alteration is effected, during which are formed both nodules the size of a hemp-seed and nodes (erythema papulatum et tuberculatum) and larger discolorations from the size of a thumb-nail to that of the open hand. The extension and metamorphosis of the original erythematous patches proceed irregularly; at the borders of the old spots new efflorescences often arise which, being of the same

[1] Charité-Annalen, iii. Bd., 1878, p. 622.
[2] "Klinische und experimentelle Mittheilungen," 1864.
[3] "Ueber venöse Stauung." Arch. f. Derm., 1874, p. 310 et seq.
[4] L.c., p. 72.

character as the former, maintain the picture of the erythema, the coloration alone showing some difference, the recent efflorescences being always more vivid than the older ones which, gradually paling, resume the normal color of the skin. This variable behavior influences the grouping of the several efflorescences. Thus the form in which the efflorescences spread peripherally and resolve at the centre is called erythema annulare s. circinatum; when new efflorescences continue to develop from the circular lines in greater dimensions which run in wave lines, circumvoluted, it is erythema gyratum; if the several nodules change into stronger infiltrations and new efflorescences resembling urticaria appear near them in numerous places, we see erythema urticatum. Transitional forms from one species of efflorescences into another may likewise be observed, namely when vesicles and bullæ develop from the nodules; then it often appears questionable whether this affection, presenting itself as erythema vesiculosum and bullosum, does not approach nearer to herpes than the erythemata (comp. below: erythema iris).

The localization of erythema multiforme forms an important symptom; its occurrence on the dorsum of the hand and foot was believed to be the most constant phenomenon. More exact observation, however, showed that erythema may occur on any part of the body, with or without simultaneous affection of the dorsum of the hand and foot; some observers even found intense eruptions of erythema in which these portions of the skin remained quite intact. The preponderating frequency of the occurrence of eruptions along the extremities was specially determined by Lewin, and he ascertained that the places of predilection of the erythemata were those where flat tubular bones are covered with thin muscular strata and tendon sheaths, *i. e.*, the extremities, the skin of the forehead, etc. This statement hardly furnishes any explanation of the nature of the erythemata, for we meet with erythema on the cheeks, the nates, the abdomen, also on the mucous membrane of the cheek, the pharynx, and the genitals (Lipp,[1] Behrend,[2] and others).

The *duration* of erythema multiforme is very variable. The nodular eruption is usually of very brief duration, and involution generally follows rapidly; while the nodular form represents a more chronic type, merely on account of the greater extent of the affection. I should not like to assert that abscess formation and ulcerations really occur, and it seems to me that all the similar statements (Hardy, Purdon, Breda, Oehme) refer rather to erythema nodosum. The ordinary average duration of erythema varies between several days and one or two weeks; only the intense and extensive forms are prolonged beyond this time, as are those where fresh exacerbations ever recur anew; but even the most intense form generally disappears within six or eight weeks without leaving any sequelæ. Where there is a tendency to relapses, the duration of the disease is unlimited, and it is a peculiar fact that erythema multiforme, in relapsing, generally reappears on the places first attacked. Unfavorable terminations occur only when complicating accidents influence it. It may not rarely be observed that extravasations are liable to occur in the nodules; when coexisting with articular affections, they have often been considered forms of purpura (Bohn, Legrand, Purdon), but this connection with rheumatic accidents is not essential, and the extravasation may be looked upon as an alteration directly belonging to the angioneurosis.

The *complications* of erythema are very manifold. The local conditions are rarely of importance—slight itching, pricking of the skin appears with the eruption; the symptoms are different, however, when the erythema is conjoined with high fever, with disease

[1] Arch. f. Dermatologie und Syphilis, 1871, p. 222.
[2] Ibid., 1877, p. 363.

of the serous membranes, articular pains, hemorrhages, etc. Formerly, such complications were not accepted as belonging to the symptoms of erythema; but at the present day there is hardly any doubt that all these phenomena are connected with the polymorphous erythema; and just as the acute exanthemata now and then have erythematous percursors, so other general diseases of an infectious or toxic nature may be conjoined with erythema. The agent causing pleuritis, endocarditis, meningitis, etc., may also give rise to the erythematous angioneuroses. I have observed numerous complications of this class, and think that the erythema must not be separated from the fundamental or accompanying affection. At times erythema multiforme runs its course without being localized in the internal organs; but we have stated above that it is inadmissible to consider it an affection analogous to an acute exanthem (Lewin); the most correct explanation will always be to designate such cases as idiopathic febrile affections; in many cases we are quite unable to determine to what extent they represent a symptom of certain noxious matters which have entered the system.

The *diagnosis* rests on the above-described alterations of the skin which at first appear as spots and after a brief existence as nodules and nodes causing neither much itching nor the formation of scales. The short duration of the cutaneous affection, its spread into the neighborhood, generally without at the same time occupying larger surfaces, facilitate the recognition of the disease. In very many cases, the occurrence of the efflorescences on certain parts of the body, such as the dorsum of the hand and foot, helps to determine the diagnosis. The violent subjective symptoms of itching; the transition into vesicles, scabs and crusts; the uniform, more extensive infiltration in the corium and the underlying layers of tissue, will serve to differentiate it from eczema. Prurigo is an affection of early life which is preceded by urticarial wheals, but not by grouped nodules; which, besides its intense itching, runs a chronic course and evinces a preference for the extensor surfaces of the extremities. The micropapular syphilide never occurs so acutely that it could be seen to arise and disappear in the time appropriate to the erythemata; besides, it is accompanied by other complications. Careful observation and thorough examination of the case will prevent its being mistaken for variola—an error which has been mentioned by Lewin, Behrend, and Résillaud.

Before entering on the further discussion of the multiform erythemata, we shall enumerate the following closely related special forms, namely:

2. *Erythema Iris et Circinatum, and Herpes Iris et Circinatus.*

Erythema iris really represents a variety of erythema multiforme, inasmuch as it is determined merely by the configuration of the efflorescences; but as this erythema almost constantly leads to the vesicular form, and inversely the latter can be brought into full analogy with the erythema, the independence of this form is justified pathologically.

The points which this affection has in common with and which distinguish it from the species of erythema above mentioned and those of herpes to be discussed below are the following:

a. The occurrence on parts of the body where erythemata appear very frequently, but herpes very rarely, namely the dorsum of the hand and foot.

b. The coexistence and transition of erythema iris and circinatus into herpes iris and circinatus.

c. The occurrence of these herpetic forms as well as of the erythema at the same time of the year—in the spring and autumn months.

Respecting the peculiarity of the iris form we wish to add the following:

Erythema iris owes its name to the spots, as does herpes iris to the vesicles, which develop in a certain grouping; peripheral, circularly arranged efflorescences forming around one centrally located. The number of the circles thus formed is variable. The term iris was used by the first observers (Willan-Bateman) on account of the various tints of colors; various shades of white and red are present, according as the patches or vesicles appear tinged by the more or less intense congestion or exudation. The normal skin between the patches and circles of vesicles always forms the lighter coloration, the affected parts being darker.

The duration of the exanthem depends on its intensity and extent; while some, usually the central efflorescences, dry, others fill with serous fluid, but the whole process lasts at most ten or twelve days and ends in complete recovery. In some cases the vesicles enlarge by the confluence of isolated efflorescences; this is, as it were, the most extreme degree of development of erythema iris, which may change into herpes and finally into pemphigus iris.

Erythema and herpes circinatus are modifications developed from the iris form as when circles of vesicles develop without central efflorescence, but they may at times be observed as primary affections in no causal connection with herpes iris. In this case we find series of red spots circularly arranged, from which are developed, in a short time, vesicles whose further course is in no way distinguished from herpes iris.

Strange to say, a disease due to parasites has by some dermatologists likewise been designated herpes circinatus (identical with herpes tonsurans). This view is erroneous; still there are at times parasitic affections on the dorsum of the hand which have every appearance of an erythema circinatum. Kaposi mentions some cases in which the suspicion of the presence of fungi was verified on microscopic examination; in the same way we occasionally find on the skin of the arm and the trunk similar diseases presenting the appearance of the erythemata which bear quite insignificant scales and likewise show a parasitic condition. But we must not be led astray by isolated misleading observations, for the erythemata here discussed are never of a parasitic nature; otherwise the diagnosis of these erythemata is based on the factors enumerated under erythema multiforme, and is materially facilitated by the configuration of the efflorescences.

Herpes iris with its related forms is usually a non-pyrexial affection, but sometimes it assumes a grave type, like the multiform erythemata, in which case the skin affection plays a prominent part; Wunderlich,[1] Gerhardt,[2] and others have reported instances in which multiple erythemata appeared on the body with every indication of a grave typhoid affection together with high fever; the eruption subsequently changed into vesicles and presented the picture of herpes universalis. On the whole, such observations are rare; but while they prove the transition of erythema into varieties of herpes with grave general complications, they fall under the same head as the pyrexial erythemata in general, of which we have spoken above.

PATHOGENESIS OF THE POLYMORPHOUS ERYTHEMATA.

The exciting causes of the erythemata are to be separated from causes of disease in so far as the latter give the incentive to those influences which change the vascular activity and thus lead to temporary or prolonged alterations. The pathological alteration of the blood-vessels concerns either the vessels alone or the tissues in which they ramify, and accordingly we may assume different disturbances caused thereby. Temporary alterations

[1] "Remittirendes Fieber mit Phlyktäniden-Eruption," in Arch. d. Heilkunde, 1864.
[2] Under the same title in Wien. med. Wochenschrift, 1878, Nos. 28–30.

of the vessels are characterized by the changed state of the blood pressure, by the fluctuations in temperature, and by the coloration of those parts of the skin which lie in the domain of the diseased vascular territory; they are comparatively of short duration, and subside without leaving any further changes; we have discussed them already with the hyperæmias as pure angioneuroses. It is different with the persistent alterations provoked by essential disturbances within a certain territory of the circulation, whereby nutritive changes follow incidentally. These metamorphoses form the manifold efflorescences such as we have described above as the forms of the polymorphous erythemata, and which may therefore also be called trophoneurotic diseases. The neurotic nature of all forms of erythema can be demonstrated by clinical and pathological experience, and we may designate as pathogenetic factors both peripheral and central irritations acting on the nerves without actual disease of the latter. Often in locomotor ataxia, in conjunction with the lightning-like pains, rapidly disappearing erythemata or attacks of urticaria may ensue which, if of longer duration, may induce other cutaneous affections.

Charcot[1] has called attention to the fact that at times within a few hours and often several days after the onset of disease of the brain and spinal cord erythemata of irregular extent and uniform duration show themselves on various parts of the skin. They are likewise to be considered the initial stages of further alterations on the common integument, such as blebs or vesicles, which again may be transformed into ulcerous forms (gangrene of the skin). Although the question as to the pathogenesis of the erythemata and many analogous exanthems is not completely solved, it is sufficiently elucidated to serve in explanation of numerous obscure points.

As regards the special causes producing the erythemata, we must admit that they are in many directions very imperfectly known. It is certain that the erythemata usually occur with greater frequency in the spring and autumn months—that is, the time when erysipelas and urticaria are most common. This morbid tendency is produced, besides the telluric, by many known and unknown influences, and we can define some types of erythema as pathogenetic forms; but here it is of minor importance whether the kind of efflorescence manifests itself as node, nodule, vesicles, or superficially, in circles or wave lines. Among the erythemata belonging under this head we enumerate:

a. The erythemata in consequence of disturbances of digestion. The status gastricus, with temporary anorexia and impaired digestion in children and adults is often followed by an erythema of brief duration, generally on the surface of the thorax and the upper extremities. Infants suffering from dentition or otherwise are also likely to be attacked by erythema in the form of large confluent patches, or isolated spots from a hemp-seed to a lentil in size, spreading over the surfaces of the back and thorax—erythema infantile, roseola infantilis. For these erythemata, the view was long accepted that the nervous system caused the reflex conditions on the skin by being put into increased activity through the morbid excitation exercised by the mucous tract.

b. Medicinal Erythemata.—They are reflex affections due to the entrance into the organism of drugs, whether by the stomach, subcutaneously, or per enema. These erythemata are merely a variety of the manifold exanthemata due to drugs. The attention of physicians has been directed to this subject only of late years. Behrend,[2] Morrow,[3] Van

[1] "Leçons sur les maladies du système nerveux faites à la Salpétrière." Paris, 1880, I., p. 84.
[2] Berliner klin. Wochenschrift, 1877–79.
[3] New York Medical Journal, March, 1880.

Harlingen,[1] Hutchinson,[2] and others, have published numerous communications on these forms of erythema in particular, while other authors have written more about the papulous, bullous, and hemorrhagic forms. Of the drugs which have been followed by erythematous eruptions should be mentioned: opium and its preparations, belladonna, quinine, salicylic acid, arsenic, chloral hydrate, calomel, and at times phenol. In some cases, the eruption appears like scarlatina, in others again in a circumscribed, patchy form; at times, an urticaria-like exanthem develops. It is strange, though, that the drug erythema, whether appearing in superficial form (rash), or as nodules, affects different portions of the skin, according to the drug administered; sometimes only the trunk and abdomen, sometimes the lower and the upper extremities are involved, but rarely the erythema seems to cover the whole body, and it is just this isolated occurrence which leads to the conclusion that the action of drugs, which is peculiar not to a single remedy, but to an entire series of them, is to be looked upon as but a physiological effect, the vaso-motor nerve-centres suffering a change as in the acute exanthemata.

c. The *Fever Erythema.*—We comprise under this term the erythemata occurring with the febrile process in general, and with forms of eruption connected with it. Even in temporary pyrexial states, a fugitive redness is apt to occur on some parts of the body with the onset of the hot stage, and this appears as a permanent symptom in a series of feverish eruptions in which it occurs as the prodromal erythema. The most important form belonging here is erythema variolosum s. roseola variolosa, a diffuse dark redness occurring in the shape of reddish spots of brief duration on the skin of the abdomen, as well as on the inner side of the thighs, which is to be regarded as the first beginning of the variolar affection. This erythema, at times, spares the genitals, while the axillary region, together with the adjoining portions of the arms, is more frequently attacked by circumscribed erythema. Very frequently there is also an extensive hyperæmia, like a scarlatinoid disease, over the entire integument, often sparing only the head and neck, often merely the abdomen, while in other cases the erythema attacks only the skin of the extremities, especially around the joints, as well as that of the hands and feet. Nosologically, this prodromal erythema is a vaso-motor sensory neurosis.

Erythema variolosum has often been mistaken for another pyrexial skin disease, and many observers have held to the belief in the simultaneous co-existence of two acute exanthemata. Hebra had positively denied the possibility "that two essentially different acute exanthemata could at the same time occur in one individual." Pædiatricians disputed this assumption, and there is hardly any doubt that such coexistence may happen. For a number of years I have had the opportunity to see numerous cases of this kind. A probable explanation for the simultaneous coexistence of two acute exanthemata might be furnished by the parasitic causes of disease, inasmuch as the micrococci and the bacteria found in acute exanthemata do not exclude the possibility of a two-fold disease within the organism. Characteristic for these combined exanthemata is the simultaneous demonstration of the definite efflorescences of each of the exanthems (such as the macular for morbilli, the diffusely punctate for scarlatina, and the vesicular and pustular for variola) and the manner of disease of the affected mucous tract, as it otherwise manifests itself in the various exanthemata. The difficulty in diagnosing these mixed forms lies, perhaps, for some physicians, in the defective recognition of these rare pathological conditions, for in the older records we may find descriptions of diseases which were called peculiar species, as, for instance, a scarlatina vesiculosa, pustulosa, pemphigoidea, etc., or perhaps, a variety of morbilli which, lasting but a short time, recurred after a few days with renewed signs of fever and showed a changed character of the efflorescences.

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[1] "Medical Eruptions," Arch. of Dermatology, 1880, p. 337.
[2] St. Bartholomew's Hospital Reports, 1878.

In connection with the erythema of variola it remains for us to mention the erythemata of vaccinia, as well as those which now and then occur as precursors of morbilli and scarlatina, also the erythema in prolonged pyrexial processes which represents a concomitant eruption of the primary disease, as in typhoid fever and at times in cholera—roseola typhosa and choleraica. The erythema or the roseola in typhoid fever is brought about in consequence of an inflammatory process and appears generally in the middle or toward the end of the first week of sickness, is of pale-red color, the size of a hemp-seed to that of a lentil, covers chiefly the thorax and the extremities, and, in grave cases, is easily transformed into ecchymotic types. In cholera the erythema occurs only toward the end of the violent symptoms, continues for a very brief time, and disappears as soon as the general condition moderates. The cholera erythema exhibits larger spots than those appearing in typhoid, is more livid and dark in color; Hebra observed it in the epidemic of 1866 at Vienna, and noticed that it occurred only sporadically in about one per cent of those attacked.

Among the erythemata of grave pyrexial diseases mention should also be made of the forms occurring in the course of diphtheria. According to my experience, they always appear as papular exanthems mostly covering the trunk, last from four to six days, until they fade with slight desquamation. In affections of the genitals, especially blennorrhagic conditions, erythemata also occur as reflex phenomena.

The Prognosis

of the erythemata in general is not unfavorable. The efflorescences usually diaappear after a brief existence without any further alteration of the skin; should the efflorescences continue longer, they ordinarily leave bluish pigment spots which are likewise lost in the course of time. A less favorable prognosis is presented by the grave pyrexial erythemata with complicating diseases of the mucous and serous membranes. Experience shows that the erythemata connected with erythematous nodes on the mucous membranes run a graver course and at times end fatally. Hebra makes mention of such a case in which the autopsy showed infiltrations on the mucous membrane of the intestinal tract which he connected with the cutaneous erythema. Grigorow[1] not long ago described a case of erythema attacking the skin and the mucous membranes which led to ulcerations in the mouth and finally ended fatally. The cases termed "ominous" by Uffelmann[2] are merely more intense nodose eruptions of erythema occurring in ill-nourished children with constitutional disease.

The Treatment

of the polymorphous erythemata is purely expectant. Many therapeutic experiments have taught us that it is only in a small series of cases we can secure prompt remedial effects. Ergotin, in the dose of 1 to 1.5 grams per day, has in a few cases brought about a more speedy involution; I found it of use where the erythema repeatedly recurred and showed a strong tendency to persist. Where the erythema can be traced to a pathological factor, the reflex affection is mastered more readily with the removal of this factor.

Where the erythemata are connected with moderate itching, we may employ cold ablutions; in other cases, mere dusting with starch, pure or mixed with zinc (Zinci oxidi,

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[1] Vierteljahrsschrift f. Dermatologie, 1880, p. 109.
[2] Deutsches Arch. f. klin. Med., xiv., 1876.