

to moderate the temperature, and an enclosing water-jacket still further reduces the heat. The lenses are so arranged as to render convergent the divergent rays from the arc light; these rays then being brought to a focus by a lens cooled by water and held by a nurse and pressed by her firmly on the affected part. The patient lies on a table or is seated in an adjustable chair, the position of which can be varied so that the light will fall perpendicularly on the surface to be treated. Each application lasts about an hour and is repeated daily. Although the light is cooled in its passage through the concentrating apparatus, it is yet too hot to be directed on the skin without detriment; hence the water-cooled lens, applied to the skin, is used in all cases, whether sunlight or electric light is used. The effect of the treatment on the patient is in no way painful. A few hours after the first application there is a certain amount of "reaction"; the part swells, becomes reddened and tender, but there is little pain. The reaction varies in degree in different cases, being always seen in lupus vulgaris, but does not occur in lupus erythematosus. The beneficial effects of the treatment are often manifested in a few days, and recovery sometimes follows a very few applications. Generally fifteen to twenty-five applications must be made before a cure is effected. The results are very satisfactory; the skin becomes soft, smooth, and pliable, and scarring is hardly noticeable, other than to the extent dependent upon the tissue destruction caused by the disease (Figs. 4135 and 4136).

The Finsen method has been most successfully used in the treatment of lupus vulgaris, but recently encouraging reports have been made of the treatment of alopecia areata, epithelioma of the skin, and naevus vasculosus.

William Cline Borden.

**ROETHELN.**—DEFINITION AND HISTORY.—Roetheln is an exanthematous disease of mild character, attended with a slight elevation of temperature, propagated by contagion, and bearing a close resemblance to measles and scarlatina. It is widely known in this country under the above appellation, and also, in common parlance, by the term "German measles." The latter name, being English, is generally used. Thus in its nomenclature Roetheln resembles the other exanthemata, which have each a technical and a common name. The Germans, however, use the names Roetheln and rubeola as synonyms; and this tends to confusion, since we signify by rubeola the different disease, true measles or morbilli. Various other names have been given to the disease by different writers, prominent among them being epidemic roseola, rubeola scarlatinosa, rubeola morbillosa, rubeola notha, and rubella. The last-mentioned name has been suggested as most appropriate, since it is a diminutive of rubeola, and thus the two words express the analogy existing between the two diseases, just as do the terms variola and varicella. For the reason, however, that Roetheln is more widely recognized, the writer retains it in this article.

Roetheln is, so far as definite knowledge is concerned, a new disease. As late as 1886 the "Index Medicus" gives it no separate place, and the articles on the subject are grouped under the heading of measles; yet the number of communications, treating of this affection, which have been written during the past ten years or so (1877-1887), will aggregate more than one hundred. Before that time, however, the disease had been from time to time spoken of, as far back as a century and over; though until the time of the present generation the greater number of observers did not consider it a distinct disease, but believed it to be a modification of measles, generally, and, in some instances, of scarlatina. Mention was made of epidemics in 1845 and 1853, and in 1873-74 the disease was carefully described, though under the name of epidemic roseola. In Germany attention was given to the subject many years before any English or American writings appeared. Now almost all physicians grant its individuality, and the arguments supporting this view will be presented hereafter.

**AGE OF PATIENTS.**—Roetheln is generally classed as one of the diseases of childhood; and, since there are no clearly proved instances of its second appearance in the same individual, it follows that those affected are usually young in years; the general rule being that any one of the contagious exanthemata is experienced but once in the lifetime of an individual. Still, it is much less prominently an affection of infants and children under five years of age than are the other eruptive fevers. Adults are frequently attacked, but the majority of those who suffer from this disease contract it some time before the age of puberty. In other words, the time of life when susceptibility is greatest is between the ages of two and fifteen years. Young infants do not seem to contract it, and it is believed that sucklings are not susceptible. As, however, it is a disease of less frequent occurrence than measles or scarlatina, and as it seems to be less actively contagious than those diseases, many growing children escape it; and these facts constitute a possible explanation of the circumstance that adults are not infrequently attacked during the prevalence of an epidemic.

The season of the year does not seem to exert any influence on its prevalence. Epidemics occur indifferently in hot and in cold weather.

**ETIOLOGY.**—Roetheln is propagated by contagion, and by this means alone. The materies morbi is believed to be portable, but the cases in which the source can be traced point toward the necessity of close contact for the transmission of the disease from the sick to the well. In a single epidemic the total number of cases among those unprotected by having previously experienced the disease is found to be small in comparison with the other contagious exanthemata. Especially is this noticeable with reference to measles, which will attack, simultaneously or successively, all the susceptible children in a household almost with certainty; while we generally meet with a single, or perhaps two, cases of Roetheln, and the greater number of those exposed, in greater or less degree, escape. J. Lewis Smith, in one epidemic, saw forty-eight cases in twenty-one families—an average of a little more than two to each family. In an institution, such as an orphan asylum, the number of cases would be comparatively larger, since the exposure would be of necessity greater at first. Isolation, therefore, can be expected to accomplish more in the direction of prevention than it does with measles or scarlatina.

Roetheln is encountered almost exclusively in epidemics, and sporadic cases are very rare. This is probably more decidedly the case with this disease than it is with scarlatina, and possibly also with measles.

Considerable difficulty is experienced in tracing cases of Roetheln to their sources—largely, no doubt, because affected persons are frequently unconfined, owing to the general mildness of the disease, and the absence of alarm concerning it. Undoubtedly, however, if its origin could always be traced, an exposure to contagion would be discovered. In other words, it is practically certain that the disease does not originate *de novo*; nor is it produced by general causes, such as improper hygienic surroundings in the matter of poor ventilation, overcrowding, or insufficient or improper dietary conditions. On the contrary, it is not found to be a disease of greater proportionate prevalence in tenement-house districts, where the conditions referred to are in prominent existence. A large proportion of the cases are encountered in the families of the better classes, and, most of all, in institutions, such as orphan asylums.

We may reasonably conclude that Roetheln is less actively contagious than measles or scarlatina, since so many of those exposed escape. Under the same conditions of exposure the number of cases arising of either of those two diseases would probably considerably exceed those of Roetheln.

The age at which susceptibility is greatest has been mentioned, being considerably more advanced than that which obtains with the other exanthemata; but as yet there is little definite knowledge as to the stage of the

disease itself in which propagation by contagion is most likely to occur. We can only say that the probability is in favor of contagiousness during the whole course of the disease—from the time when prodromal symptoms, if present, appear, until the eruption has entirely disappeared.

**CLINICAL HISTORY.**—*Stage of Incubation.*—Much attention has been given to the duration of the stage of incubation—the time elapsing between a traceable exposure and the onset of the disease. This is frequently made difficult of accurate investigation for the reason before mentioned, that isolation is not observed because of the mild character of the affection, and sometimes even confinement within doors is not enforced. The general experience is that this stage occupies from fourteen to twenty-one days; though in some epidemics the duration has been considerably less. Shuttleworth had the opportunity of ascertaining, in an asylum, that twenty-one days lapsed after the first case appeared before the second occurred, isolation being enforced, and two days later two fresh cases developed. Goodhart says that the incubation, in twenty-three out of twenty-five cases, was from fourteen to twenty-two days. Edwards gives six days as the shortest and twenty-one days as the longest. Cheadle ascertained it to be eight days in one instance, nine in another, and (approximately) twelve days in five more. Griffith's experience was that in twenty-six cases the eruption appeared between the fifth and twelfth days after the first case was discovered. Therefore it must be granted that considerable variation exists in the length of this stage, although we may consider that a period of fourteen days represents the average. The incubative stage of measles is much more constant—standing, as it does, at thirteen and fourteen days.

*Stage of Invasion.*—In very many instances the eruption is the first thing which calls attention to the existence of sickness. Since many of the patients are old enough to describe any subjective symptoms which may be present, it follows that the stage of invasion is frequently attended with little or no disturbance of general health. With children too young to describe their own sensations, the attention of parents is often attracted by no manifestation whatever—such as restlessness, or crying, or digestive disturbance—until the eruption becomes visible. It is, however, probable that there is always present a slight rise of temperature, not sufficient to cause discomfort; and close questioning might elicit an admission of a feeling of malaise. But, as stated, the breaking out of the rash is what causes uneasiness, and leads patients or parents to consult a physician for the purpose of ascertaining the nature of the sickness.

There are, on the other hand, cases in which there is more or less decided disturbance of health prior to the appearance of the eruption. Epidemics undoubtedly vary greatly in severity, as do individual cases in a single epidemic; and from the average of descriptions it would appear that the disease is more severe, as well as of more frequent occurrence, in Europe than in the United States. These more severe cases present certain indications of sickness, before the rash appears, which, taken in connection with known exposure, point toward Roetheln as the oncoming disease; but in themselves they have little value as regards the differential diagnosis, especially, from scarlatina and measles. The symptoms, when present, have special reference to the mucous membranes of the air passages, and to the digestive system. They are: mild inflammation of the throat and tonsils, shown by swelling and redness on examination, and by pain and slight cough; a slight degree of coryza; conjunctival irritation, lachrymation, and a little tendency to oedematous swelling of the eyelids. Nausea and anorexia have been frequently observed, and in rare instances vomiting. Frontal headache in a few instances is the source of much discomfort. The digestive disturbances appear to have been prominent in some and absent in other epidemics. With these symptoms—and, it is not improbable, in their absence—there is a rise of temperature to 99° or 100° F. in mild, and as high as 103° F.

in severe, cases. In addition to these indications there is one symptom highly characteristic of the fully developed disease, as will hereafter be seen,—a symptom which has been observed in the prodromal stage. This is enlargement of the post-cervical lymphatic glands—not those at the angle of the jaw, as obtains in scarlatina and diphtheria, but those in the back of the neck. This enlargement should always be looked for, since it is the only feature of diagnostic value in the stage of invasion. Jaccoud found it, in five out of thirty-two cases, four or five days before the efflorescence. Associated with this, stiffness of the neck with pain on movement of the head, in slight degree, should be sought for.

Any throat inflammation present might easily be accounted for in expecting scarlatina to develop; and coryza, cough, and conjunctival irritation belong to the clinical history of measles. Rise of temperature also, of course, accompanies the onset of both these diseases; and consequently, excepting only the glandular enlargement, so far as these general symptoms are concerned, it is only in their lesser degree of severity that they are characteristic of Roetheln rather than of the other two affections.

These indications, when present, precede the eruption by a period, in the great majority of cases, of less than twenty-four hours; although in some instances malaise is present for three or four days before this stage is ended. Cheadle, in describing a severe epidemic, observed that the prodromal symptoms persisted longer in severe than in mild cases. Edwards gives the average duration as three days.

It is therefore observable that the stage of invasion, when present, is subject to considerable variation—both as to length and severity—and is, in fine, a much more uncertain quantity than is that of scarlatina or measles.

*Stage of Eruption.*—The prominent feature of the disease is the eruption, often, as before stated, being the only phenomenon perceptible, and generally being by far the most prominent manifestation of a condition of sickness. Very great differences, in different epidemics and in individual cases, are to be found; and, considering the eruption alone, a diagnosis might well be difficult, if not impossible. As the symptoms other than the eruption, such as those found in the prodromal stage, present considerable variation, and as this fact holds with the eruption itself, we may conclude that the disease, as a whole, is far less stable than scarlatina and measles. These are more than variations of degree—they affect the essential characters of the symptoms and of the eruption.

Scarlatina, for instance, may be very mild or very severe as regards the throat inflammation and fever; and its eruption may be difficult of detection, or as marked as a pronounced rash of erysipelas; but these are differences of degree, and the sore throat and eruption are uniformly present, and are *sui generis*. The same rule holds with measles. The essentials of the disease—the catarrh of the respiratory tract, and the characteristic eruption—may, one or both, be very mild or very severe; but they must both be present in any case in which the diagnosis is undoubted. Roetheln, on the other hand, may consist, from beginning to end, of the eruption only, or may present some of quite a variety of symptoms affecting the mucous membranes of the air passages or of the digestive apparatus.

Regarding the eruption itself, its characteristic points are as follows: Its color is generally a pale rose, less distinctly rose-tinted than that of measles. It is very frequently brownish, brownish-red, and sometimes quite distinctly brown, with no tinge of rose or pink to be detected, and giving the general effect of duskiness.

As to location, no part of the surface is entirely exempt. The palms of the hands, the soles of the feet, and the scalp have been observed to present it; although usually it is not to be found in those regions. As a general rule, the face, trunk, arms, and legs break out successively before the final disappearance of the rash; although cases are often described in which the affected area is much less extensive.

Either the face or the upper part of the body may be

first affected, and the spread of the eruption is rapid—one day or less sufficing for its appearance on the remoter parts after its initial appearance. The maximum of intensity is very quickly attained. Beginning on the face, for example, in very faintly marked spots, after a period of a few hours, and certainly within one day, it will be at its height, and the spots will be plainly visible. Then a fading process sets in, gradually progressing, accompanied with, or followed by, some desquamation, and continuing for about two days; so that, in any selected locality, from the first appearance to the final disappearance, an average period of three days is occupied. This, however, is not a definitely fixed time; sometimes it embraces but two days, and at other times it is protracted to six or seven.

The duration of the eruption as a whole, without reference to any special part of the surface, is consequently a little longer than that of its presence in a given locality—by the time occupied in the spreading from the region first to that last attacked. As this generally requires one day, or somewhat less, the eruptive stage of the disease can be expected to continue about three days on the average, though subject to the variation spoken of, having as extremes two and seven days. It will be observed, from the rapidity of development in a selected locality as compared with the rapidity of the spreading to other regions, that different parts will present the eruption in greatly varying conditions; and that at no given time will it be at its maximum uniformly over the entire surface of the body. In other words, it may even reach its height in one part before appearing in another. This is a point of value in diagnosis, and of contrast to scarlatina and measles, in both of which there is generally a stationary period as regards the spread and intensity of the eruption after the maximum has been attained.

The eruption is papular. If the hand is passed gently over it, a sense of roughness, at least, is perceptible, showing a certain degree of elevation above the surrounding skin. From this very slight condition of elevation differences are to be found up to a state in which the elevation is distinctly and at once visible—as much so as in a fully developed rash of measles. But, in some degree, elevation of the spots is always present, and therefore it is a mistake to describe the eruption as macular.

The size of the papules is one of the points in which there is considerable variation. In general they are smaller than the papules of measles, varying from the diameter of a pin's head to that of a pea. In a certain proportion of cases the spots are so small as to constitute mere punctation, and the skin presents the appearance of being covered with innumerable fine dots. They are of irregular shape, but with a more decided tendency to assume the circular form than is observed in the spots of measles. In a given case there is generally some uniformity in the matter of size—either the papules are for the most part of the larger size, or they are nearly all small. Still greater differences of size have been described, however, papules of one-third of an inch in diameter having not infrequently been encountered.

Generally the skin between the papules presents a perfectly healthy appearance, although careful investigation will occasionally reveal the existence of minute fine lines or processes connecting adjoining papules. A general erythematous redness of the skin has also been noticed. Confluence of the papules is very rare, though not uniformly absent.

Vesicles have been observed, but this has clearly been a coincidence, and not at all a part of the ordinary course of the eruption. They are probably found quite as often with measles, and in either case must be regarded as anomalous. The eruption has been observed to disappear suddenly, and after a short time to reappear; and unusual warmth, as from heavy clothing, renders it more distinctly visible. A certain amount of itching is often present, though not severe, and the heat and burning, which are a source of discomfort in scarlatina and measles, are not at all pronounced in Roetheln.

To sum up the characteristics of the eruption, we may

make a division of the cases into two classes, which correspond with the descriptions formerly given of rubeoloid Roetheln on the one hand, and scarlatinoid on the other. In each variety the resemblance to the other disease, as far as the eruption is concerned, may be very close—often sufficiently so to render the diagnosis extremely uncertain, if the other points of history and symptomatology be not carefully considered.

In the first class of cases, comprising the greater number, the papules are of larger size, perhaps abundant enough to be considered confluent, of somewhat irregular shape, pale rose color, and raised considerably above the skin. It will be seen that this state of affairs can obtain with measles quite as well as with Roetheln.

In the second class the papules are smaller, more circular in shape, less elevated above the skin, of darker hue, much more numerous, and sometimes very closely aggregated, so as to give the punctated appearance alluded to. If this be the appearance, there may easily be nothing in the eruption by which to discriminate it from a scarlatinoid rash at the onset or during the first day of the disease. A fully developed rash of scarlatina is continuous, leaving no skin normal in appearance between the eruptive spots; and in Roetheln the papules are distinctly separated from each other.

If, therefore, an extreme case of either variety be taken, it will be found that other points in symptomatology and history are requisite, and possibly a delay for one or two days may be necessary, in order definitely to eliminate doubt in the diagnosis.

**Desquamation.**—Desquamation is the mode, or perhaps a better term would be the accompaniment, of the termination of the eruption, beginning on the second or third day. It is furfuraceous in character, never occurring in large scales or pieces of skin as in scarlatina. It is fine, and in this resembles more the desquamation of measles. It is much less decided than in scarlatina, and is often so slight in amount as to be perceived only on very careful inspection, and frequently passes unnoticed by either the patient or the physician. Many writers on the subject do not make mention of the process, and frequently the statement is made that it is not a part of the clinical history of the disease. The writer cannot contradict this, though holding the view that it is present in some degree in all cases. As fading of the color of the eruption very quickly sets in, and is progressive until its final disappearance, the desquamation is the accompaniment of this.

The desquamation is not to be found affecting at one time the entire surface which has presented the eruption. It follows the appearance of the rash, and, consequently, is visible on one part of the surface before it is on another. Furthermore, it does not take place over the entire affected surface—much of the eruption fades away without desquamation, and the latter is to be searched for about the trunk, legs, and arms especially. The face and extremities usually escape. In this there is another point of resemblance to measles.

Following the customary division of the eruptive fevers into stages, we may consider the stage of desquamation, fading, or decline, to occupy the time from the second day of the eruption to the end of the disease. But it must be borne in mind that the line of division between these two stages, *i. e.*, of eruption and of desquamation, is much less distinctly marked than in scarlatina or measles.

Occasionally a faint staining or pigmentation has remained for several days after the disappearance of the rash proper.

**Symptoms Other than the Eruption.**—These have been in part considered under the head of premonitory symptoms, or those presenting themselves in the stage of invasion, and are, in great part, simple continuations of them. They are found, like those of scarlatina and measles, to have special reference to the mucous membranes of the nose, throat, and conjunctiva, together with more or less disturbance of the digestive functions. The inflammatory condition of the throat and tonsils, which is

the most frequent of these symptoms, varies greatly in degree, and, beginning in the stage of invasion, persists up to the time when the rash has reached its height, and then subsides with the disappearance of the rash. Slight cough sometimes persists for a few days longer. The conjunctival irritation and the oedematous swelling of the eyelids are not often pronounced, and follow much the same course as the throat symptoms.

The nausea, which presents itself often enough to call for special mention, is generally noticeable only until the rash has developed.

The tongue is commonly coated, but does not at all present the appearance of the strawberry tongue of scarlatina. All these symptoms, when present at all, are of decidedly milder character than they are in scarlatina and measles.

The temperature range has been referred to as being liable to differences in epidemics and in individual cases. As a general rule, the rise is much less than that of the two other diseases. An elevation of from one to two degrees—to 99.5° or 100.5° F.—is what we may look for; it persists for about three days, and in the given case does not present the fluctuations characteristic of measles, but remains at the same level until its final subsidence.

The pulse and respirations are accelerated in proportion to the rise of temperature.

In general a severe case presents a greater variety of these symptoms, as well as a greater severity, and a mild case, absence, or nearly such, of them.

The single phenomenon, over and above the eruption, which is characteristic, and one might almost say pathognomonic, of Roetheln, is the enlargement of the post-cervical and suboccipital lymphatic glands. Probably in no case is it found wanting. This occurs at the onset of the disease, and therefore, as stated, may not infrequently be discovered before the appearance of the eruption. The number of glands affected varies from one or two up to seven or eight. Search should be made for them from the occiput down to the level of the shoulders, and toward the middle of the neck rather than at the sides or near the angle of the jaw. In scarlatina, diphtheria, and other throat affections, the glands which present enlargement are those at the angle of, as well as beneath, the lower jaw. In such instances the swelling seems to be proportionate to the severity of the throat inflammation, and to be associated with it, as in adenitis in the neighborhood of inflammation elsewhere in the body. But the adenitis of Roetheln cannot be so explained, as it is found equally in the cases with considerable sore throat, and in those with none. Therefore it should be regarded as a distinct phenomenon of the disease, and not as an accessory.

Associated with the enlargement is stiffness of the neck, and pain on moving the head, in some degree, though never very severe. The enlargement itself varies, the glands being of about the size of a split pea or bean; suppuration does not occur, and the swelling and pain subside with the disappearance of the eruption. Occasionally a single gland will remain perceptibly enlarged, though painless, for an indefinite length of time.

Valuable as this point is, there are yet sources of error, and glandular enlargement from other causes must be excluded.

The condition which we recognize as struma, indicating the general condition of ill health due to bad hygienic surroundings and malnutrition, has, as a prominent feature, general glandular enlargement, perceptible in the groins, axillae, etc., as well as in the neck; and syphilis may present the same condition. Accordingly, search should be made in those other localities before assigning a cervical adenitis to an oncoming, or present, attack of Roetheln. Enlargement of the glands at the angle of the jaw is to be attributed to other causes. Children with eczema capitis have, almost always, large lymphatic glands in the neck.

During an epidemic of measles in 1886, the writer made investigation with special reference to this point, and found that in twenty-four out of twenty-nine cases an

enlargement of glands exactly similar to that of Roetheln was present, and constituted a prominent feature of the cases. This was evidently a peculiarity of that epidemic, as the writer has neither before nor since found it to be the case, except in isolated instances. Griffith states that he has not infrequently found it. Care was taken to render the diagnosis of measles certain, and mention is made of this point here to show that the adenitis characteristic of Roetheln is not absolutely pathognomonic, and will not in itself suffice for differential diagnosis from measles.

**Non-identity with Measles and Scarlatina.**—The writer has, of necessity, made frequent mention of Roetheln as contrasted with scarlatina and measles, and the reasons for considering it to be an independent disease must now be considered. There are still some who consider it a hybrid, consisting of elements drawn from both those diseases, and being intermediate in character between them. This position is scarcely tenable, and is not supported by clinical facts; since the greater number of cases, though having points in common with both, present, each one, strong points of resemblance to one or the other of the two affections, and not to both at the same time. That is, any single case is either decidedly scarlatinoid or decidedly rubeoloid; and the differential diagnosis lies between two and not three diseases. Furthermore, hybrids are not at all common, and analogy is opposed to this view. Generally, what is called a hybrid can be resolved into its elements, and may be pronounced a conjunction of two or more diseased conditions. Undoubtedly scarlatina and measles may be found coexisting in the same individual, or following each other so closely as to overlap, the inmates of a household being exposed to and contracting both diseases at the same time, or in rapid succession. These cases, however, present the phenomena of both diseases in such a manner and degree as to exclude uncertainty in the diagnosis, and they bear no closer resemblance to Roetheln than does any single well-pronounced case of either disease.

The question of its identity with one or the other of these diseases calls for more careful consideration.

There are but few who believe Roetheln to be identical with scarlatina, but many consider it of the same nature as measles. In a scarlatinoid case the principal points in common are: the short period of invasion, the existence of some sore throat, and the fine punctate appearance of the rash at first. Roetheln is liable to be confounded only with a very mild case of scarlatina; for the vomiting, high fever, pronounced sore throat, and characteristic tongue of average scarlatina are not encountered in the former disease. The points of difference are most prominent in the longer duration of the eruption in scarlatina, its greater uniformity, its macular character, the nature of the desquamation, and the presence of sequelae which do not occur in Roetheln. In addition to which the adenitis of Roetheln is not to be found in the other disease.

As to measles, the similarity also exists in a certain proportion of cases of mild character. The symptoms which may be common to both are the rose color and papular character of the rash, the shorter duration of the period of eruption, the fine desquamation, and possibly the adenitis. The main point of difference is the presence, in measles, of two or three days of fever, with catarrhal inflammation of the respiratory mucous membranes, uniformly preceding the eruption. The sequelae of measles, also, are not to be expected in Roetheln.

As stated, these resemblances are encountered only in extreme cases. Average cases of each disease have special characteristics sufficient to clear away doubt; and the differences just enumerated go far toward proving non-identity in either direction. But the strongest reason for believing in the individual nature of Roetheln—constituting, indeed, a conclusive proof—is that no mutual protection is afforded. That both scarlatina and measles are, if the expression be allowed, autophylactic has been proven by thousands of observations. Second attacks of scarlatina are so rare as to be curiosities in the history of medicine; and with measles, although the

rule is not so free from exception, yet a second attack is a very infrequent occurrence. This rule applies to Roetheln. As yet there are few, if any, authentic records of second attacks. But when the question of mutual protection, which would be a *sine qua non* to the supposition of identity, is considered, the most conclusive evidence of its absence is presented.

Of J. Lewis Smith's 48 cases, 19 had had measles, and 1 contracted the disease subsequently. Of Shuttleworth's 30 cases, more than half had had measles, and 4 scarlatina. In one case the patient had measles five months, and scarlatina one month, before. In 13 of the cases, in which subsequent observation was possible, 7 contracted measles and 6 scarlatina after the lapse of a few years. Goodhart observed that 39 out of 63 cases had had measles.

Instances might be multiplied to a very large number, but it is unnecessary; for the non-existence of mutual protection is too well established to admit of doubt. There is, however, another aspect of this question, or, rather, another explanation of the facts, which has been presented with considerable appearance of probability. It is that Roetheln is simply the modification of measles presented in second attacks, bearing the same relative position that varioloid does to smallpox. There are two reasons for regarding this position as untenable. The first is, that pronounced attacks of true measles have, in a large number of instances, followed, and not preceded, Roetheln, and these cases have presented no modification in kind or severity of the symptoms which go to make up the clinical history of measles. This applies with equal force to scarlatina. The second reason is, that in the individuals who have been the subjects of second attacks of measles, the symptoms have been as uniform and pronounced as in the first.

On the contrary, a much closer analogy can be traced between smallpox and varicella on the one hand, and measles and Roetheln on the other. The ratio is much the same in regard to corresponding severity, and in similarity of appearance of the eruption.

The final separation, in the minds of medical men, of the former pair from each other was beset by the same uncertainties as that of the latter.

Another fact of significance is that Roetheln occurs in epidemics, when neither scarlatina nor measles is prevailing; and, in the same epidemic, most of the cases will be rubeoloid, and a smaller number scarlatinoid.

Text-book descriptions of measles commonly refer to a variety of the disease under the designation of "rubeola sine catarrho," this name indicating a condition in which there is fever, with an eruption similar to that of ordinary measles, and at the same time absence of the inflammation of the respiratory apparatus. Perhaps it is fair to regard these as cases of Roetheln; and a significant observation made by Watson, in his "Practice of Medicine," gives support to this view. He says: "It is observed that rubeola sine catarrho confers no protection against recurrence—is commonly succeeded by an attack of measles in its true form." Meigs and Pepper make the same observation as to their experience.

To summarize, the points demonstrating the non-identity of Roetheln with measles or scarlatina are:

1. The difference in clinical history.
2. Absence of mutual protection.
3. Absence of modification in second attacks of those two diseases.
4. Occurrence of epidemics while the other two are not prevailing.
5. In any epidemic, resemblance of some of the cases to one, and of some to the other, of the two diseases.

A further differentiation of the two varieties into two distinct diseases is possible; but it would be a refinement almost beyond our present powers of observation.

DIAGNOSIS.—The diagnosis is principally made by process of exclusion, because, at the outset, the presence of scarlatina or measles is generally suspected. From scarlatina at the outset, or in the first day or two of sickness, in certain mild cases, the points of difference are:

In Roetheln, the absence of, or presence in a milder degree, of sore throat; the absence of the strawberry tongue, and the existence of a whitish coating if any change be present; the absence of continuity of the eruption; and the presence of post-cervical adenitis, the glands at the angle of the jaw being unaffected. After the lapse of two or three days the course of the eruption in Roetheln is to reach its maximum and begin to disappear quickly, and the desquamation, when perceptible, is fine, and not in flakes or patches of some size.

Pronounced cases of scarlatina do not resemble Roetheln sufficiently to render the diagnosis uncertain.

From measles the discrimination is to be based mainly on the absence of the stage of fever with catarrh preceding the eruption, or its very mild character and shorter duration. The cervical adenitis has much weight, though it is not absolutely conclusive. Though the rash may very closely resemble that of measles, yet the papules are less elevated, smaller, less aggregated, less decidedly rose-colored, and run their course more quickly—desquamation setting in two or three days before it would be likely to occur in measles.

Subjoined is a comparative table of these three diseases in their different stages, giving also the average duration of each stage:

ROETHELN.	SCARLATINA.	MEASLES.
Duration, six to twenty-one days.	Stage I.—Incubation. Two to fourteen days.	Twelve to fifteen days.
Inconstant.	.....	Constant.
One day or less. Often absent.	Stage II.—Invasion. Less than one day. Never absent.	Two to four days. Never absent.
Malaise, slight.	.....	.....
Sore throat and lachrymation.	Decided sore throat.	Drowsiness, cough, coryza, conjunctivitis, photophobia.
Cervical adenitis.	.....	.....
Temperature, 99°-100°	Temperature, 103° +.	Temperature, 102° +.
.....	Stage III.—Eruption.	.....
Three days. Begins on face or chest.	Six to eight days. Begins on chest.	Four to five days. Begins on face.
Papular, slightly.	Macular.	Papular, decidedly.
Pale rose, or darker and brownish.	Deep-red scarlet.	Rose.
Not continuous.	Continuous.	Not continuous.
Ceases spreading in one or two days.	Ceases spreading in three or four days.	Ceases spreading in two or three days.
No stationary period.	Stationary period of two to three days.	Stationary period of two to three days.
Burning or itching, slight.	Burning, often great.	Burning and itching, decided.
.....	Stage IV.—Desquamation.	.....
Very slight and fine.	In scales of quite large size.	Furfuraceous, and often not pronounced.
Overlaps stage of eruption.	Preceded by stationary period.	Preceded by stationary period.
Last two or three days.	Lasts ten days, and sometimes longer.	Lasts about four days.
.....	.....	Leaves dull-colored stains.
.....	Complications.	.....
None characteristic.	Acute form of Bright's disease.	Bronchitis.
.....	Rheumatism.	Pneumonia.
.....	Otorrhoea, and necrosis of temporal bone.	Tuberculosis.
.....	.....	Inflammation of the intestines.

In addition to these other exanthemata, certain simple skin diseases must be considered in the diagnosis. Sometimes the eruption of miliaria papulosa (prickly heat) resembles that of Roetheln; but it occurs in well-defined patches of several inches in diameter, is associated with unusual sweating, and lasts many days longer. Also, there are no febrile and constitutional symptoms accompanying miliaria, and the itching is usually great.

The most careful investigation possible into the origin or sources of contagion should be made; and in cases of

doubt a positive diagnosis should be withheld for one or two days. It may be advisable to explain the uncertainties, and to adopt the precautions as to isolation, etc., necessary in scarlatina.

COMPLICATIONS.—Complications or sequelæ characteristic of the disease do not exist. A condition of transient albuminuria is spoken of, but it is not indicative of renal disease. After the rash disappears we may expect to find the usual condition of health present. The prognosis is therefore good.

TREATMENT.—Because of the mildness of the disease there is generally nothing called for in the matter of medication—simple restriction of diet and avoidance of exposure during the continuance of the elevated temperature being all that is necessary. Practically the interest and importance attaching to Roetheln lie in recognizing it as a separate disease, and in the exclusion of the more serious affections, scarlatina and measles.

BIBLIOGRAPHY.—Besides the treatises of Meigs and Pepper, J. Lewis Smith, Vogel, Day, Goodhart, Eustace Smith, and Ellis, on "Diseases of Children"; those of Bristowe, Bartholow, Loomis, Aitkin, and Flint, on the "Practice of Medicine"; and DaCosta's work on "Medical Diagnosis," the following articles may be mentioned: Hardaway, in "Pepper's System of Medicine"; Harts-horne, in "Reynolds' System of Medicine"; Thomas, in "Ziemssen's Cyclopædia"; Cheadle, Shuttleworth, and Squire, in the *Trans. Internat. Med. Cong.*, 1881; Griffith, in the *New York Medical Record*, July 2d and 9th, 1887; Edwards, in the *Am. Jour. Med. Sci.*, 1884; Jones, *Boston Med. Journ.*, 1881; Sholl, *Med. and Surg. Reporter*, 1882; T. D. Swift, *N. Y. Medical Journal*, November 27th, 1886; Harrison, *Am. Journ. Obstet.*, 1885; Duckworth, Erskine, and Gowers, in *London Lancet*, 1880; Dukes, *ibid.*, 1881; Yonge-Smith, *ibid.*, 1888 and 1886; Strover and Jaccoud, *ibid.*, 1886; Shuttleworth, Brown, Burnie, Davis, Rooke, and Wilson, in *Brit. Med. Journal*, 1880; Byers and Sadell, *ibid.*, 1881; Lawrence, *ibid.*, 1882; Shackleton and Cullingworth, *ibid.*, 1883; McLeod, *ibid.*, 1885; and Ryle, *ibid.*, 1886.

Thomas D. Swift.



FIG. 4137.—*Rosmarinus officinalis*; flowering branch. (Ballou.)

ROSEMARY.—*Rosmarinus officinalis* L. (Fam. Labiate). U. S. P. 1880. The dried leaves of *Rosmarinus officinalis* L. Fam. Labiate.

These leaves are obtained from a small, slender, evergreen, blue-flowered shrub, native of the Mediterranean region, and somewhat cultivated for medicinal purposes and as a decorative shrub. The flowering twigs are also sometimes employed. The leaves are about 2.5 cm. (1 in.) long, oblong, but so strongly recurved at the edges as to appear linear in the dried condition, obtuse at both ends, destitute of a petiole, entire, coriaceous, dark-green with a slight bluish cast above, and grayish-green and densely woolly and glandular underneath. The odor is characteristic

and somewhat camphoraceous, the taste aromatic, pungent, and somewhat terebinthinate. Although the use of the drug has now largely been superseded by that of its one or two per cent. of volatile oil, the action is not quite the same in both of them, since the drug itself also contains considerable tannin and resin and a little bitter substance. The latter, therefore, is a useful aromatic bitter and tonic. The fresh decoction, or the fluid extract, applied to unhealthy wounds, is a good vulnerary, though somewhat irritating unless carefully employed. The dose of rosemary is 0.5-1 gm. (gr. vij.-xv.)

*Oil of Rosemary* (*Oleum Rosmarini*, U. S. P.) presents the appearance of a colorless or at most a pale yellow fluid, has a specific gravity of from 0.895 to 0.915, is freely soluble in alcohol, and possesses the characteristic odor of the drug and a similar and somewhat camphoraceous taste. It contains cineol, borneol, and camphor, with other less important substances. It possesses all the activity of the drug, but in an intensified degree. It is often given internally as a carminative and general intestinal stimulant, though its use has greatly declined. The dose is from one to five minims. It enters into the compound tincture of lavender. Owing to its actively local stimulant or irritant properties, it is considerably used as a local application for promoting the nutrition of the skin and also as a vulnerary. Henry H. Rusby.

ROSEOLA.—Roseola is often incorrectly used as synonymous with rubella or Roetheln. Unquestionably many efflorescences which have been called roseola are in fact the efflorescences of rubella, and the reverse is quite true, that many of the reported cases of rubella are nothing more nor less than roseola. When properly used, the word roseola should simply indicate a rose-colored rash, a form of erythema, and should not be spoken of as a specific disease.

A roseolous efflorescence may often precede the appearance of the exanthemata of rubella, scarlet fever, measles, variola, and vaccinia, but should not be confounded with the specific efflorescences which are characteristic of these affections, and which usually occur later in the course of the disease. A roseolous rash may also occur in other conditions such as cholera, typhoid, diphtheria, and malaria—in fact, in almost any condition which gives rise to fever. If the word is to be used at all, one should designate the disease accompanying it, as, for instance, "roseola syphilitica," "roseola vaccinia," "roseola febrilis," "roseola typhosa," etc., but the tendency is to drop the term entirely from medical nomenclature.

Whereas the roseolous erythema may closely resemble the efflorescence of rubella, measles, or scarlet fever, it has the following points of distinction: It is neither contagious nor epidemic; there are no characteristic prodromal symptoms; it is not confined to any special portion of the body; there is either no fever at all, or, if the fever be present, it does not run a characteristic course; it may last a few hours, or it may disappear after a few days without desquamation; the erythematous areas are not so crescentic as in measles nor so tumefact as in scarlet fever.

A roseolous rash is very common in infants and in children as a result of dentition, gastric or intestinal disturbances, or in connection with the many febriculae seen in early life, for which no sufficient cause can be found. Again, it may occur in infants who are in perfect health, and in whom nothing else abnormal may be detected. It is in these special cases that the term "roseola infantilis" has been used. Maynard Ladd.

ROSES.—The genus *Rosa* L. (fam. *Rosaceæ*) comprises upward of a hundred species of prickly shrubs. Although of little medicinal value, strictly speaking, these species contribute several articles possessing important uses in flavoring, perfuming, and coloring and exerting a mild stimulant, antispasmodic or tonic action. Three of these articles are official, as follows: *Rosa Gallica* or *Red Rose*, "the petals of *Rosa Gallica* L., collected before expanding."