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RECURRING ECZEMA OF EXPOSED PARTS; HEAT ECZEMA, COLD ECZEMA.

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UNDER various names—*e. g.* Eczema erythematosum (Crocker), erysipelas-eczema (Hutchinson), and Eczéma érysipélatoïde récidivant des arthritiques (Brocq)—a type of eczema has been described that seems to have a claim to separate consideration.

A general description of these cases is given by Dr. Crocker (*Dis. of the Skin*, 3rd edit., p. 152) and by M. Brocq (*Mal. de la Peau*, 1890, p. 154). In the *Archives of Surgery*, vol. i, p. 127, Mr. Hutchinson quotes a number of most interesting cases, and gives a very full description of the same.

Sometimes without any obvious cause, but more frequently as a consequence of some known traumatism—such as exposure to cold winds, sun-rays, great heat, and certain chemical substances,—the face, and frequently the hands and forearms, are suddenly involved in an acute œdema with more or less superficial catarrhal dermatitis according to the nature of the exciting cause. The œdematous swelling may subside as quickly as it came, only to reappear on the slightest provocation. It is apt to recur more particularly in the spring and autumn, when the conditions favouring its development are in active operation.

The œdema may make its appearance in subjects who either show or have shown chronic eczema. It may, on the other hand, pass on into a practically incurable form of eczema.

The phenomena may be entirely confined to the exposed parts—face, neck, forearms, and hands. In some cases, however, they are accompanied by eruptions on the covered parts which, in some instances at least, are easily recognised, and appear to be directly dependent on the original exciting cause.

It goes without saying that cases of such a striking nature forcibly attract the attention, and this more especially so since the sufferers are much inconvenienced, and are often confined to the house for many days at a time.

For this very reason it is quite possible that they have received undue notice, and that they are merely exaggerated examples of more common and less noticeable affections.

A consideration of the cases goes far to show what an important part traumatism plays in their production, and particularly the physical conditions, such as cold winds and the rays of the sun. It would appear, too, that heat, independently of the direct exposure to sunlight, can act as an exciting agent.

During the past few years an enormous amount of labour has been devoted to the eczema question, and it must be admitted that it has not done much to clear up the subject. It is just as hard now to say what eczema is as it was before, and just as difficult to treat it. Still, some important points have been cleared up. Naturally a great part of the work has been devoted to a consideration of the parasitic origin of eczema; and in this connection the studies published by Kreibich and by Veillon are of especial importance. They showed that the primitive *clear* vesicle of eczema was amicrobic. I have had frequent opportunities to test the accuracy of their observations, and can fully confirm them. The method I adopted was to sterilise the surface with ether and alcohol, and then to lift off the cap of the vesicle with fine forceps and to place it on an agar slope in the warm. After two days the small pellicle of epithelium was broken up by means of a platinum needle. Part was spread over the surface, and the other part was used to make a film preparation that was stained in the ordinary manner. I found no organism of any sort. Later on I discovered that it was

possible to obtain a sterile surface by covering the part with zinc gelatine that was peeled off just before the vesicle was removed. I examined a considerable number of cases with negative results. Whenever the serous collection was straw-coloured or turbid, I invariably found staphylococci, and generally the *Staphylococcus aureus*.

For my part, and following M. Sabouraud, I regard these fluid collections as pustules, and I recognise that much of the present confusion of terms and of ideas depends on the varying interpretation of these elementary lesions. A case shown by one person as acute vesicular eczema is regarded by another as a pustular dermatitis, and there is no court to decide which is right. Obviously, however, the conception of the part played by micro-organisms in the production of eczema must be much influenced by the views held on this particular point.

Whatever view is taken as to the nature and meaning of these yellow serous collections, which almost invariably contain organisms, it is tolerably certain that the clear eczema vesicle is amicrobic, and some of the finest instances can be derived from the class of cases now under consideration.

In the summer of 1901, when the heat was very intense, I saw a man who was suffering from an acute eczema of the hands and forearms. The affected surfaces were swollen enormously, and this was specially marked on the extensor or exposed aspects, which were thickly covered with clear vesicles. The palms of the hands were also affected, and studded all over with the sago-grain vesicles that Mr. Hutchinson describes in some of his cases. Several attempts were made to obtain cultivations from the vesicles on the back of the hands, and also from those on the palms. In each instance the result was negative. The case was almost certainly one of acute dermatitis produced by sun rays, and as such would be excluded from the eczema class. I don't know the subsequent history of this man, but if it corresponded to that of other cases that I have seen he would be attacked again and again by the same disturbance, and the state produced would be absolutely indistinguishable from true eczema. Hebra taught that a great number of agents, acting externally, could produce eczema, amongst which he mentions chemical irritants and temperature. In this age of bacteriology much that Hebra taught has been forgotten or

denied, and the departure from his teaching has been aided by the continued attempt to separate the occupation dermatoses (grocers' itch, masons' itch, etc.) from eczema. Theoretically the distinction may be good, but practically these very cases form some of the most troublesome types of eczema that the dermatologist is called upon to treat. In order not to unduly extend the limits of this communication, I should like to consider the effects of cold winds and of heat and sun rays on the skin. If it could be established that these agents, acting alone, could produce true eczema, then it would be reasonable to suppose that other known irritants, when made to act *in a particular fashion*, could do the same. Croton oil, for instance, when applied, does not produce an eczema, but an acute dermatitis, that heals as soon as it is permitted to do so. But if croton oil be applied from time to time with the special object of producing an eczema, there can be little doubt but that the attempt would be in time successful. The chronicity of the case—and for eczema no explanation is sufficient that does not explain this point—may depend on two factors only:

1. The constant or repeated action of some irritating agent.
2. The damage done to the skin as the effect of such action.

The deleterious effect of atmospheric changes is only too obvious to all who study skin affections. It requires no special diathetic theory to explain why conditions hitherto endured without hurt become extremely harmful. Any departure from the normal physiological condition of equipoise may determine such action and permit the temporary establishment of a pathological state, *e. g.* an occupation dermatosis, a dermatitis due to sun rays, etc. The conversion of the temporary into a permanent condition must be sought for in the repeated exposure to the same irritant, in the skin changes induced by it, and in the liability of such damaged surfaces to be affected by new irritants, of which micro-organisms may be mentioned as the chief.

It would be foolish to assert that diathesis played no part in the production of eczema, when one sees daily cases in which the constitutional state actually induces the traumatisms—*e. g.* scratching and rubbing—that in turn produce the disease.

My object is to put forward reasons for believing that a very large group of eczema cases depend for their existence entirely on

simple traumatism, *i. e.* non-microbic, and that the constitutional state need play little or no part in the production.

Clinically, one encounters three important groups in the enormous mass of cases that have to be called eczema :

GROUP 1.—Cases in which the constitutional state dominates the picture, and the eczema is largely dependent on it.

GROUP 2.—Cases in which the skin is unable to endure the ordinary traumatisms to which it is subjected.

GROUP 3.—Cases in which the disease behaves as a parasitic affection from the commencement.

It is with Group 2 that I wish to deal, and, of that group, with the cases attributed to cold and heat.

The action of cold.—Whenever cold weather sets in, more particularly in the case of cold wind, a great part of the community suffer from chapped hands and faces. In individual cases it is ascribed to imperfect drying of the surfaces after washing, to the action of the fire, to friction, etc.; but the majority of people are in no doubt as to the proper cause, without which it would not be produced. Owing to the action of cold, the face and hands become covered with fine cracks and a slight branny desquamation. On parts where movements are free, such as the lips, the backs of the wrists, and about the finger-joints, the cracks often develop into deep and painful fissures, which heal very slowly so long as the cold weather continues, and are apt to become infected by pus organisms. The palms of the hands and the fingers become dry and hard and much fissured.

If this state be considered for a moment it will be obvious that there is something more than this fine cracking of the surface epithelium. There is, in fact, a slight œdema of the exposed surfaces. In many cases it is so slight as to pass almost unnoticed; but a great number show it clearly, and in some it is very pronounced. At the same time it will be noted that the skin of the covered parts is inclined to be dry and rough. There is an exaggeration of the state known as *Cutis anserina*, and the skin often itches dreadfully, more especially when the individual comes into a warm room or in bed. This leads to scratching and to the development of irritable papular eruptions (papular eczema) on various parts of the body. Thus, as the effect of cold, there are—

1. Œdema of exposed parts.

2. Cracking of the surface skin, fissures on the lips and fingers, and around the anus.

3. A pruriginous condition of the skin of the body and extremities, with a tendency to dry, itching, papular eruptions.

4. Frequent development of impetiginous sores.

The changes encountered naturally vary considerably in accordance with the general state of the person affected. In those who are full-blooded, with the vessels distended, the œdema is apt to be very conspicuous, the surfaces become bright red owing to the dilatation of the vessels, and the cracks, instead of remaining dry, give issue to a serous discharge that coagulates on the surface. The cracks also become converted into superficial excoriations. Many of these cases give a history of pseudo-erysipelas. In those who are fat the papular eruptions are more pronounced.

In the numerous cases in whom a spare habit of body exists, with anæmic skin and absence of subcutaneous fat, *e. g.* xeroderma, the effects of cold are most marked. The hands become very dry and wasted; the cracks extend in every direction and become very deep. The palms are rough and dry, and much fissured. In fact, the state produced is that known as Eczema rimosum.

To my mind a consideration of the state known as “chapped hands and face” indicates that it is the groundwork on which a very large class of eczemas are built up, which might well be called *eczema a frigore*.

Such cases show the three features already noted—namely, œdema, cracking, fissuring, and excoriation of the surface and pruriginous eruptions. They tend to recur with the cold weather, and with each reappearance to be more resistant to treatment. When the initial damage is very severe the eruption may not recover, and may so pass at once into one of the most chronic forms of eczema.

I will give a few illustrative cases. The first is under the charge of my colleague, Dr. Marshall, whom I thank for permission to mention it.

A girl aged 16, domestic. Attacks commenced when she was three years old, and have reappeared every year, mainly in the spring and autumn. Eczema confined to the face and hands. The surfaces are œdematous, scaly, and cracked. There are many deep and ugly fissures on the lips and fingers. The affected surfaces are

slightly erythematous, but not really red. The scalp has never been affected.

W. S—, a male aged 30. Duration of present attack, five days. He has had similar attacks for fifteen years every spring and autumn. They come after exposure to cold winds. Six years ago he had an attack of erysipelas (?). There was no fever, and he did not feel ill, only his face was greatly swollen and red. When seen he showed a peculiar eczematous eruption on the face. The whole of the nose was affected, and the rash extended out on to the cheeks along the ridge formed by the muscles. On the left side it soon faded away into a merely reddened surface, but on the right side it covered the greater part of the superior maxillary region and the malar prominence. It extended upwards along the supra-orbital ridge to about the centre of the orbit, and backwards along the zygoma to the ear. The whole of this surface was deep red in colour, swollen, and traversed by superficial excoriations, owing to which the horny layer was peeling off in flakes. Each lobule of the ear was deep red, swollen, and excoriated. On the sides of the neck beneath the angle of the jaw and covering the mastoid region was an eruption of various-sized red papules, or clusters of papules, such as one sees in ordinary eczema. It was impossible to see this case without being reminded of Lupus erythematosus, there being a remarkable resemblance. At the end of a week the swelling had disappeared, the redness nearly gone, and only some scaliness remained, with some injection of the vessels. On the following week, owing to a return of cold weather, he had a relapse. He is now nearly well, but it is interesting to note that his nose is becoming chronically eczematous, and does not improve as the other parts have done. The scalp was not affected.

M. J. M—, female, aged 56. Disease commenced about 12 years ago, at the time of the menopause, by what she described as "flushes," which appear to have been swellings of the face. These were followed by the appearance on the neck and in the bend of one elbow of scaly red patches that have persisted ever since. Six weeks ago an attack of acute erysipelas (?) that followed a ride on the top of a 'bus, in the course of which she was severely chilled. She felt very ill, but there is no evidence to indicate that the "erysipelas" was accompanied by fever. The erysipelas developed

apparently into a general exfoliative dermatitis, in which the skin came off in large flakes from the trunk and extremities. When seen, the whole face, neck, and upper sternal region were swollen, deep purplish red, and scaling profusely. "There is vivid erythema in the bends of the elbows, with numerous and deep cracks, which prevent the full extension of the arm. The rest of body has evidently improved rapidly, since it shows little; merely isolated red papules and slight scaliness in places. Beyond a slight degree of scurf the scalp is not affected. She has a fine growth of hair, which has not fallen out. Considering the intensity of the inflammation on the face and neck, it is a little remarkable that the scalp has remained unaffected." This case illustrates the fact that after exposure to cold, although the exposed parts are most affected and take longest to recover, the covered parts may be affected as well.

W. B—, male, aged 36. Carman, much exposed to weather. He had pleurisy in January, 1902, and was laid up for three weeks. Not long after recommencing work, he was exposed for the greater part of a day to a storm of sleet, as a consequence of which he felt chilly. On his return home his face swelled. I saw him three weeks later. The lower half of the face from the eyes downwards was much swollen and bright red. The affected surface was traversed in every direction by cracks and narrow excoriations which exuded serum. The ears were affected in the same fashion; on the neck was a papulo-macular eruption due to a serous exudation round the follicles. The backs of the hands and fingers were swollen and much cracked, with some deep fissures. His forehead escaped because his hat came down as far as his eyebrows. I have had this man under my charge for more than a year. He presents a typical chronic eczema of the face, neck, and hands. Sometimes it gets nearly well, and then reappears as badly as ever. It is interesting to notice that the sun now does him harm as well as the cold. The forehead, which escaped at the first attack, has not been affected, and the scalp is perfectly healthy.

All generalisations concerning eczema are notoriously dangerous. Most prove false, and such as are true are generally old. Yet I see some reason for thinking that there is a form of eczema due to cold and to no other cause, and that such cases can be readily distinguished and possess features peculiar to themselves, of which the œdema,

the cracking of the surface, and the involvement of exposed parts are the chief, as well as the pruritus and regular recurrence.

The idea seems to me to be of some value, since I find that, by applying these tests to old cases described in my note-books, I can easily recognise a great number whose nature and origin had, at the time the notes were taken, been difficult to explain.

I now see that a number of cases of eczema in babies of a very special type belong to this class. A perfectly healthy, fine-looking baby is brought showing a dry eczema of the face, neck, and backs of the wrists. Usually the scalp and forehead escape. The eruption commences on each temporal region, extends over the cheeks on to the chin, and perhaps on to the neck. It is usually symmetrical, vivid red in colour, and shows the cracked condition so characteristic of the type. The eruption on the wrists is similar in character. The cases come in the cold weather, and they relapse very readily.

This condition has generally been considered to be of reflex origin. It is almost always possible to find some cause for reflex disturbance in babies as in other persons; but the theory has never appealed to me, more particularly as some of the children are conspicuously healthy. The effect of exposure to cold may well be thought of in such cases.

A great number of cases of *Eczema rimosum* come under this heading, as also many of the numerous cases of eczema of the face and hands that come for treatment. I feel sure that an examination of the cases of winter prurigo will yield interesting results.

The tendency for cold to aggravate eczema has been known from time immemorial; but it is strenuously denied that these simple irritants can produce the disease. They are said to produce merely a simple transient catarrh, and when eczema arises as a consequence, appeal is made to some subtle thing—an eczema tendency, a diathesis, a something failing which eczema cannot exist.

It would be foolish to maintain that there are not some states that, more than others, predispose to eczema. The point is incapable of proof one way or other. Yet it is noteworthy that, after so many years of study, so little is known about these predisposing constitutional states. There is some excuse for thinking that they really play a small part in the genesis of the disease.

On the other hand, the part played by simple traumatic influences,

e.g. cold, sun heat, chemical and mechanical agents, etc., in originating and perpetuating eczema, is a matter of daily experience; and a catarrh once produced by one agent can be kept up by the continued action of that particular agent, and, what is more important, by the action of others. To give a simple instance: A bricklayer has his skin constantly irritated by lime. One day the skin becomes inflamed, and he has to seek treatment. From this time on he cannot stand warm weather, and he finds that whenever he is exposed to intense sun-heat his skin becomes inflamed. It would be possible to multiply instances and ring the changes indefinitely from actual practice. There is, in fact, a catarrh originated by a simple traumatism, and maintained or reproduced by the same or other traumatic influences. It is not necessary to seek for a special constitutional state, or to invoke the aid of the nervous system; and obviously micro-organisms play merely a secondary part in the process.

At some particular moment the damage is done, and the skin structures, hitherto able to endure the extreme reactions to which they are naturally exposed, now fail to react. It may well be, and generally is the case, that at this moment the patient's health had been impaired by some illness, by alcohol, etc. But often the patient's health is excellent, whereas the traumatism has been excessive. When once the damage has been done, a host of other influences come into action, amongst which micro-organisms play a very important part as well as heat and cold.

If it should be possible to take some particular agent—such, for instance, as cold,—and to show that it produces an eczema differing in certain important particulars from eczemas produced by other means, it might be possible to distinguish other types, and thus build up by degrees a new classification of cases that would be of real use in the treatment of the disease. To a certain extent this has already been done, since every careful observer tries to discover the cause or causes that have been at work to produce the case before him. Their very number increases his belief that the one real cause is hidden from him. To my mind the conception of the disease is rendered far clearer if this “one real cause” is put entirely out of view. A disease so multiform in its appearance can scarcely have a single cause; it must be the product of many.

The action of heat and sun rays.—Whenever there is a sudden

change of temperature, and specially after the first outburst of warm weather in the spring, the hospitals are flooded with patients suffering from eczema. It is unnecessary to state such a self-evident fact as that heat aggravates eczema; but this experience makes it reasonable to inquire if heat may not actually produce it, and, what is more, produce some type that can be clearly distinguished from others.

The inquiry is by no means simple. Not only are most eczemas aggravated by the sudden onset of hot weather, but there is the influence of the sweat function to be considered, and the different action of heat and of the rays of the sun. Then, too, just as the eczema due to cold is a reaction produced very largely by the return to the warmth, so the reaction brought about by heat depends largely on the degree and rapidity of the subsequent chilling.

In the first instance the reaction is produced at the time when the cutaneous vessels are reduced to their smallest dimensions, and the extra-vascular tissues are driest. For this reason the strain on the vessels is great, and may even lead to an effusion of blood, as in the case of chilblains and certain hæmorrhagic eruptions. Usually the subcutaneous œdema is the chief feature, and the surface skin is stretched and cracked by reason of it whilst in the worst possible condition to undergo such a process.

In the second instance the reaction is produced when all the surface vessels are widely distended, and the extra-vascular tissues loaded with serum. As a natural consequence, the changes produced by heat are certain to be more acute, and attended by a much greater degree of serous exudation on the surface, and of swelling of the epidermis.

It is, of course, desirable but extremely difficult to distinguish between the direct action of radiant heat and light on the one hand, and the indirect effects produced by the change of temperature on the other.

As might be expected, the various forms of radiant energy have an action on the skin in inverse ratio to their power of penetration. It is very difficult to say whether or not the ultra-violet rays have any appreciable damaging effect on the skin. If, as seems probable, most of the lamps now used for the light treatment of lupus do not allow such rays to pass, then many of the assumptions as to the effects they produce will have to be given up. By reason of their

increased power of penetration, it would seem probable that their effect would be produced not on the skin, but in the deeper parts, where their course tends to be intercepted. In fact, though we speak a great deal about the action of ultra-violet rays, very little is really known about them. Beyond a possible influence on pigment formation, it is hard to see what effect the photo-chemical properties of these rays can have on the skin. On the other hand, we do know that radiant heat can destroy the skin almost in an instant. In a less concentrated form it can blister it to any degree. And we know that light, when applied in a concentrated form for a longer period, acts in precisely the same fashion.

Hence it is fairly obvious that when an acute dermatitis follows exposure to sunlight, it *can* be originated by the combined action of the heat and light rays. On a very bright day, when the sun rays have nothing to intercept them, the light alone must be almost sufficient to blister the skin of an unaccustomed person, and the light and heat rays combined certainly can do so.

It seems to me that Dr. Bowles, in his paper, "The Influence of Solar Rays on the Skin" (*Brit. Journ. of Derm.*, 1893, p. 237), has omitted the most potent cause of sunburn, *i. e.* chilling after exposure to heat, and for this reason his conclusions must be regarded with suspicion. This is the more curious since this most interesting communication has many suggestive statements. He says:—"How grateful is the change from the hot and oppressive moraine to the refreshing coolness of the glacier!" He notes that Mr. and Mrs. L— were burnt on the Pigne d'Arolla, although they did not see the sun from start to finish. They were very cold. Professor Langley, in ascending Mount Whitney, found that the higher he went *the cooler it grew*, and the more the sun burnt the skin. Glass-workers, iron-workers, etc., may, it is true, be exposed to high temperatures (400°—500° F.) and not be burnt. But I question if any of the Alpine guides suffer from sunburn. It is a matter of habit, and it is the unaccustomed that suffer. The actual temperature does not count. The only question is, Can the person endure the subsequent reaction on passing from the hot to a cooler atmosphere?

It is by no means necessary to call in the aid of the ultra-violet rays to explain the phenomena. Nor is it necessary in these cases to appeal to streptococci, or any other micro-organisms. They may be

present ; in fact, any acute effusion of serum on the surface may favour their growth. But it is an outrage on common sense to believe that a dermatitis that follows immediately on a definite, and usually severe exposure, and the acuteness of which subsides rapidly as soon as the case is removed from the sunlight and treated with some simple cooling application, can be due to the action of micro-organisms.

It is not unreasonable to suppose that sunlight can damage severely the skin of an individual who is normal in every respect. But in most of the cases there is some predisposing factor that renders the subject more susceptible to injury, and that may be so much in evidence as to entirely obscure the real cause of the attack. The patient's skin may be unusually sensitive to sun rays, or his occupation unfits him to bear them. Some illness may previously lower his tone. It may well be that when the predisposing factors are well marked, a dermatitis, really due to sun rays, is ascribed to some other cause. And what happens as the result of exposure to sun rays almost certainly follows exposure to heat rays from a fire. The eczema so commonly met with on the shin-bones of stokers, and on the thighs and forearms of women who do much cooking, often has this as a cause.

Willan and Bateman made *Eczema solare* the first of their three species of eczema. It is evident that they regarded it as a distinct affection, and they ascribe it to irritation from the direct rays of the sun and from heated air. The name was changed by Tilbury Fox to *E. simplex*, and the class swept away by Hebra, who took it into his one and all-embracing disease, eczema.

Few or no persons believe now that eczema is a single disease. It represents the action of many traumatic influences, and since the reactions of the skin are necessarily limited in number owing to structure, inflammations due to many varied causes may closely resemble one another. But it is important to remember that, when they do so resemble one another, the irritants causing them almost certainly act in the same fashion. It seems possible in this way to secure a rational grouping of cases, which will be useful not only diagnostically, but for treatment as well.

It is easy to recognise Willan's *E. solare* from the description given, and the cases are so different from some other types of eczema as to deserve different names. In hot weather there are

plenty of cases, and they present a remarkable degree of uniformity as to their main features.

There is an acute flow of serum to the surface, mainly of the exposed parts, but also of the trunk, and particularly the axillary and genital regions. The serous flow may merely form a red and swollen surface, but more commonly it causes an abundant eruption of vesicles, whose contents at first are clear and later turbid.

Where there is any obstacle to the outrush of serum, such as is afforded by the thick horny layer of the hands and feet, large bullæ may form (*cheiropompholyx*).

It is especially characteristic that the vesicles often rapidly coalesce, causing a complete exfoliation of the horny layer and the formation of large, raw, weeping surfaces. This takes place more particularly on the hands, forearms, and face.

Bateman remarks on the resemblance some cases bear to scabies, and Hutchinson has repeated the observation.

The eruption subsides rapidly, but is very apt to recur with a return of hot weather.

The face may be enormously swollen, but the œdema is more on the surface and more inflammatory than that caused by cold winds. Any existing eruption is apt to be aggravated, and this applies with particular force to seborrhœa of the scalp. The whole scalp may be red and weeping, and the greater part of the hair fall out.

The two conditions may well be compared in the following table :

	Eczema due to cold.	Eczema due to heat.
Onset	Sudden and acute	Sudden and acute.
Course	Quick subsidence with frequent relapses. Recurrences common. In time becomes a chronic affection	Quick subsidence with frequent relapses. Recurrences common. In time becomes a chronic affection.
Distribution	Mainly confined to the exposed parts—face, neck, forearms, and hands. Pruritus of covered parts common. On the face special preference for nose, skin over malar bones and zygoma, lobules of ears	Mainly confined to exposed parts—face, neck, forearms, hands. Eruption also common on genitals, in the axillæ, and on parts covered by warm clothing, <i>e. g.</i> the vest area; or on parts specially exposed to heat, <i>e. g.</i> the thighs in cooks, the legs in stokers.

	Eczema due to cold.	Eczema due to heat.
Type	Erythematous-squamous, with cracking or fissuring of the surfaces. At times marked œdema of face—œdema sub-cutaneous. Secondary pus infections common	Vesicular. Rapid exfoliation of large portions of the horny layer, with formation of raw red weeping surfaces, showing little tendency to crust formation. At times marked cutaneous œdema of face. Furuncles common.
Special local features	Scalp rarely affected. Hands, dryness and deep fissures often the only sign. Erythema slight. Same on palms. On cheeks and nose may bear a close resemblance to Lupus erythematosus	Scalp commonly affected. An existing seborrhœa of the scalp may be greatly intensified. On the covered parts and between the fingers often closely simulates scabies (Bateman, Hutchinson). On palms and soles in extreme degree as cheiropompholyx.

Thus there are two perfectly distinct types of eczema, due to different causes, that resemble one another in certain particulars, and differ just as markedly in others. They can be easily recognised and distinguished the one from the other if seen at a fairly early stage of development. Later, when chronic changes have become conspicuous, and other traumatic influences, *e. g.* scratching, micro-organisms, etc., have introduced fresh features, the recognition is far from easy.

I believe these two forms are in no way dependent on micro-organisms for their production, and that they are directly due to cold and heat respectively. These agents can act injuriously without the intervention of any predisposing cause, but more commonly some predisposition has paved the way. Such may be an illness that lessens the power of resistance of the patient. More commonly it exists in the life of the individual who is, owing to his habits or occupation, unfitted to bear the strain. Thus a person who works all day in a hot room bears the cold badly; one who works in a dark room is affected by the sun. A very important predisposition lies in the gradual damage done to the skin by irritating occupations. To give some typical instances:

A man is employed in chemical works, where the skin of his face and hands is constantly irritated by fumes. He develops an

eczematous dermatitis on these parts. This is treated and seems to disappear. He is then exposed to intense sun heat and develops an acute dermatitis, marked by swelling and redness of face and ears and a copious serous discharge. The hands and forearms become enormously swollen. Large portions of the horny layer exfoliate off from the forearms, leaving raw, red surfaces. Large bullæ form on the backs of the hands, between the fingers, and on the palms. This eruption tends to return again and again, always taking the same form. However long he might have continued his irritating occupation, he would never have developed an inflammation of this nature without the intervention of the heat.

The same applies to some cases in which acute eczema attacks bricklayers, plasterers, etc. Owing to the nature of their occupation these subjects are constantly exposed to a great number of traumatic influences, and the cases are very hard to disentangle. But they are specially exposed to the weather, and the sun plays a very important part in the causation of the eczema they are so prone to suffer from, and also in the type it is apt to assume.

There is nothing novel in the views I am putting forward. Their only merit is a respectable antiquity. In the days of Willan eczema was a simple subject that could be dismissed in a few pages. Now it seems to require huge books of from 300 to 500 pages, and the longer the book the more confused the picture becomes.

Eczema is either a very simple matter or else its true nature is entirely hidden from us. Taking into consideration its universal distribution, and the fact that in such a large number of cases the disease results from a definite and well-known form of traumatism, and only appears on the parts so affected, there is good reason for holding the former opinion.

No one who wishes to understand eczema would take as a model the cases in which the disease has existed for many years, and has by degrees spread over the greater surface of the body. Much can be learned from them, but they throw little light on the causation.

It is only by taking cases at an early stage that it is possible to form any idea of the processes by which a chronic and extensive eczema is evolved. Then with each case the following questions arise:—Is this case due to any particular traumatism? Does it correspond in features to other cases produced by the same irritant?

Can it be distinguished in any way from cases due to other irritants? Is the trauma in question adequate to start the disease, and adequate to maintain it when once started? Has any other form of traumatism intervened to change the type? Is there anything in the state of the patient to enable one to assume that the eruption in question might have appeared without the action of any external irritant?

If it can be established—and I think it can—that such agents as heat and cold are adequate to produce and maintain an eczema, and that the form produced depends on the agent that is acting, then it should also be possible to establish that other irritants, playing an important part in the production of eczema, could do the same, and that each form so produced could be distinguished from all the rest. The differential diagnosis would depend not so much on the actual lesions, but on their grouping, time of appearance, behaviour, etc.

The only merit I claim for this communication is that it is a slight effort to make a start in what I believe to be the right direction.

SOME REMARKS ON THE PATHOLOGICAL ACTION OF THE RÖNTGEN RAYS, WITH SPECIAL REFERENCE TO THE LITERATURE ON THE SUBJECT.

By J. M. H. MACLEOD.

IN spite of all the careful work which has been done in connection with the Röntgen rays since their discovery in 1896, and the great literature which has now collected around the subject, there is still considerable uncertainty both with regard to the nature of these peculiar radiations and their precise action on the tissues. The time-honoured theories that the beneficial effect of the rays from a Crookes' tube is the result of a thermo-chemical action, or a vague electrical influence, or the generation of ozone, have now become obsolete and been superseded by the view that these radiations have a specific action on the tissues; but it is still a matter of conjecture whether the effect on the skin, especially where dermatitis or burning is produced, is not partly due to the electrical effluvium around the tube. Thomson's experiment, in which he was able to