[illegible] more to the soil conditions in which the [illegible] than to any special pathological [illegible]. Still, owing to the presence of the [illegible] glands and the coexistence of Lichen scro-

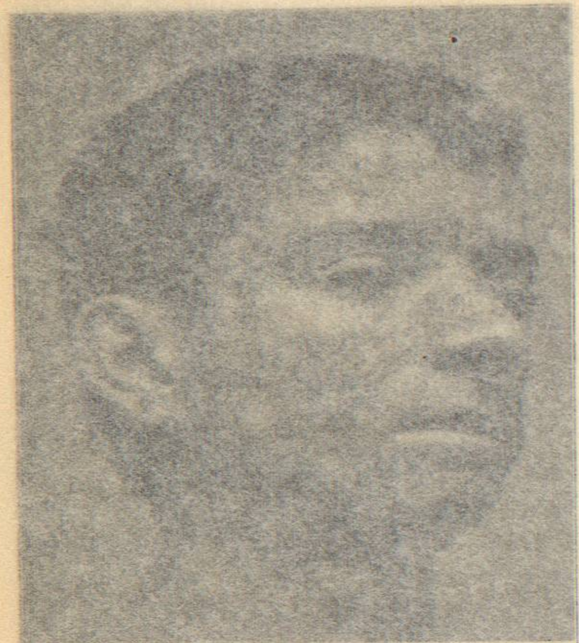

FIG. 14.—Acne Cachecticorum of the Face. (From a photograph taken by Dr. George H. Fox.)

fulosorum, a tendency exists to regard it as a form of "scrophuloderma" and of tuberculous origin.

The *iodide* and *bromide acne* are eruptions caused by these drugs when taken internally. The iodic acne occupies the same regions as acne in general, though it is very apt to be more disseminated over the surface. There are no comedones, but the lesions appear as an acute eruption of hard papules, which may enlarge and become pustular. General symptoms of iodism are usually coexistent. The bromide acne appears often on the face, but has a predilection for the hairy surfaces—scalp and eyebrows. The lesions are papules, pustules, and tubercles. They often form around the hair follicle and the lesion is pierced by a hair. Both of these may be caused by any iodine or bromine compound, and though the eruption generally ceases with the cessation of the drug, it may, however, persist for several months afterward.

Acne picea, tar acne, occurs in those regions upon which tar has been used. The orifices of the sebaceous glands become blocked up with the tarry plug, which acts in a similar manner as the comedo and leads to perifollicular inflammation and the formation of a papule. Pustulation also takes place at times. The same condition may result from the use of chrysarobin. The application of ointments, particularly in those regions in more or less constant contact with each other—the inguinal, the axillary regions, for instance—very often produces a follicular disturbance very analogous to an acne, in so far that the lesions implicate the sebaceous glands and consist of papules which become, later, pustules. There can also be referred to here the folliculitis of the face and arms of flax spinners (Purdon), and the eruption occurring on the thighs, which is due to the oils and grease used by spinners in their vocation (Leloir).

PATHOLOGY.—The pathological changes in acne a[illegible] constituted by inflammation of a sebaceous gland, [illegible] occurrence of suppuration, and in a greater or less[illegible] gree the destruction of the gland and the surround[illegible] tissue. The cause of these changes may be of va[illegible] origin and is certainly not a single specific one. It [illegible] be the comedo or other agent blocking up the foll[illegible]ular orifice, and acting as a foreign body causing [illegible] follicular congestion and inflammation through [illegible] chemical change. The causal agent may, moreove[illegible] some pathogenic micro-organism present in the follic[illegible] prior to its closure, or carried to it through the ci[illegible]tion. The fact that certain micro-organisms have [illegible] found to be especially associated with the producti[illegible] pus has suggested that the acne pustule was the [illegible] of infection of the sebaceous follicle by some one or [illegible] of these pyogenic germs. But the literature on [illegible] subject is too chaotic to warrant absolute statemen[illegible] that regard, for we find that though the Staphyloc[illegible] pyogenes aureus and the Staphylococcus pyogene[illegible] have been found present by some observers (Barth[illegible] and others), yet Unna has a special micro-organi[illegible] acne, Boeck has another, and Gilchrist advises [illegible] 1899 that he has one different from all of these, a[illegible] this which is *the* specific one. With all of these [illegible] organisms accused of causing acne, no inoculatio[illegible] periments have, however, been carried out; and si[illegible] causal relation between the lesion and themselves [illegible] based only on their presence in the cases examin[illegible] would be better to leave to the future the decisio[illegible] gard to their effect in the production of the lesion. [illegible] may be the cause of the acne lesion, but at the sam[illegible]

FIG. 15.—Acne Cachecticorum of the Back. (From a photograph taken by Dr. George H. Fox.)

they may not be. At any rate, they certainly [illegible] the only cause, as is evident when experience [illegible] obtained from observation of many cases, which [illegible]edly suggest that the eruption is often the [illegible] probably, of some toxic agent in the circulation, [illegible] is sought to be eliminated by the skin, and which [illegible] as an irritant leads to a perifollicular inflammation [illegible] a subsequent folliculitis.

ACNE INDURATA, SHOWING THE DEEP-SEATED LESIONS WHICH DISTINGUISH IT FROM THE SIMPLE VARIETY.

(FROM THE COLLECTION OF PHOTOGRAPHS OF DR. GEORGE HENRY FOX.)

Pathological Anatomy.—According to many writers, the starting point of the inflammatory change is around the follicle of the lanugo hair attached to the gland, the latter becoming only secondarily implicated in the process. The writer has, however, frequently found the hair follicle absolutely intact and not concerned in the pustular formation. The inflammatory changes always begin around the follicle—that is, it is primarily a perifolliculitis. The tissues are infiltrated with round cells, which are located at first around the network of blood-vessels supplying the sebaceous gland attacked. Unna states that the infiltration consists of palsma, large fusiform "mast" and a few giant cells, leucocytes being found only when suppuration has occurred. The degree of infiltration varies in different lesions and cases. The writer has found that in acne simplex lesions, infiltration is more superficial and located about the duct and upper part of the gland, while in the indurate form it is deeper and around the body of the gland especially. It may also extend widely throughout the cutis; and several contiguous glands becoming affected, they melt together into one inflammatory and suppurating area. The perifollicular inflammation having extended to the gland, its parenchyma becomes infiltrated, its cavity is distended, and its walls rupture in places. Its contents are then composed of sero-fibrinous fluid, sebaceous débris and leucocytes, some intact glandular epithelium, and often the comedo. In acne simplex the gland is not always destroyed, but in acne indurata it generally is. The same changes may affect the follicle of the lanugo hair attached to the gland.

Etiology.—The etiological causes active in the production of acne, whether of the simple or indurate variety, are manifold, and the process cannot in any sense of the term be regarded as of specific origin. Whether the many disturbances or systemic conditions found in connection with these cases are to be estimated as of causative importance, or as simply of predisposing effect, is a question which will be determined when the pathological origin of the disease is absolutely established. Until then, it can only be said that without their proper valuation and consideration, no case of acne can be understood or its needs correctly estimated, for it is more upon these etiological factors that treatment should be based than upon any other feature presented by the process. Age plays an important part, as the inception of the disease in the large majority of cases is at or about the time of puberty. Still it occurs at other ages, and the writer has seen it develop at every period of life between puberty and the climacteric, and even later. In youth, acne simplex is most common, but acne indurata occurs most frequently after twenty-five. That it tends to disappear at the age of twenty-one—a belief so current among the laity and unfortunately the general medical profession also—is an unwarranted assumption, due to the fact that many patients have at that age recovered from one or another disturbance of nutrition incident to their development, and occurring during the period in which stability of their tissues was in a stage of transition; that is, major etiological causes of the disease had by that time been removed by nature, by general treatment for other systemic conditions, or by greater care of the functional and general health on the part of the individual afflicted, through education and possibly observation of the relation existing between the eruption and some deviation from normal health.

Menstrual and uterine disorders are frequently accused as predisposing factors in the production of acne, but still too much stress should not be laid upon them alone, since the cause of the menstrual disturbance may more properly be the important factor. At any rate, an aggravation of an existing acne will commonly occur before, during, or after a menstrual epoch. And yet the abnormal conditions which affect this function may be entirely removed, but the eruption will persist; or the acne may be radically cured, while the functional or other disturbance of the uterine organs remains unchanged. In association with the process, all other forms of functional and nutritive disturbance are also met with. Constipation is very frequent and not uncommonly chronic catarrhal forms of diarrhœa. Chlorosis or anæmia of variable grades and debility of various origin are often the basic factors. Gastric and intestinal dyspepsia are common, though in my experience it is most usually fermentative intestinal indigestion which is of importance. Dilatation of the stomach has been stated to be particularly common in these cases, but it is undoubtedly exceptional. Mental and physical exhaustion, excesses of any and every kind, masturbation, urethral irritation, a sedentary life, excessive exercise, the gouty, rheumatic, or strumous constitution, all must be mentioned as causes of acne in themselves or through their influence upon the systemic health. But if analysis is applied to all of these, it cannot but be evident that the whole may be comprised in the category of lowered or debased nutrition, as all are productive of more or less marked nutritive disturbance of the organism. In consequence, the etiology of acne can be briefly stated to depend especially upon some disturbance occurring in the functional or systemic health of an individual, which results in disordered or lowered nutrition. External and local causes, however, also play a certain part in the production of the disease. Among these, there may be mentioned exposure to cold winds, to irritation of various kinds, inattention to clean liness, etc. The face, the locality most generally affected, is that surface especially and constantly exposed to such factors as changes of temperature, to dust and dirt of every description carried by the winds, to irritating influences of many kinds; and the fact that it is attacked so disproportionately in frequence to other surfaces equally or almost as rich in sebaceous glands would suggest that these various external agents and causes have an influence in developing or at least in aggravating many, if not all, cases of the disease.

As particular causes of acne, the atrophic form of rhinitis has been mentioned, and recently a German colleague has claimed that all cases of the process owe their origin primarily to some slight or severe ulcerative or erosive process in the nasal cavities, which allows entrance of pyogenic germs into the lymphatic circulation.

The acne due to the use of iodine and bromine compounds has as its direct inducing cause one of those substances, and is a drug eruption; not an acne in a strict sense, but one of artificial origin. The same may be stated in regard to the folliculitis due to the closure of the follicle by tar—after use of a tar ointment—and known as acne picea; while the many other processes dubbed acne of one kind or other, having nothing in common etiologically with acne simplex and indurata, should all be strictly disassociated from these.

The effect of diet upon the disease is of some importance, since it may originate the process, through the functional disturbances which it may create, or it may aggravate an already existing acne. Among the articles of diet which may be particularly mentioned are sweets of all kinds, pastries, oatmeal, cheese, nuts, highly seasoned and rich foods, shellfish, etc. Milk in certain individuals appears to have the effect of causing an outbreak of lesions; so also has cream, fermented drinks, such as beer, etc., champagne and syrups with soda or natural waters.

Diagnosis.—There should be no difficulty in making the diagnosis of a case of acne. Popularly known as "pimples" or a "pimply face" or an attack of "blackheads," it is so common that its recognition should be immediate. Especially is this the case with acne simplex, in which the comedo plays so important a rôle; but acne indurata may at times offer some points of doubt. The papular form of eczema may be differentiated by its occurrence on the extremities as well as on the face, and it is never limited to the latter. Its lesions are smaller, often crowned with a minute vesicle, and they tend to coalesce into patches; they are very itchy, and when opened do not contain sebaceous débris. The vesicular or pustular elevation is superficial and results in the formation of epidermic scales and small exudation crusts. The pustular syphilide may be mistaken for acne, and vice versa;

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and so much is this the case that one form of syphilitic eruption has been named acneiform. These lesions may be limited to the face, but they are more often coincident with syphilitic manifestations on other parts of the body or on the mucous membranes. They tend to form groups, to dry and become covered with crusts; and when these are removed, a punched-out ulceration filled with sero-purulent fluid and bounded by a more or less infiltrated wall is found. Many mistakes in diagnosis are made between an indurate acne and the superficial gummatous syphilide—the so-called tubercular syphilide—especially when the latter is situated on the nose. But the error should not occur when it is borne in mind that the syphilide as a rule is circumscribed in its occurrence, its lesions are grouped, indolent, undergo softening and crust formation, and beneath the latter ulceration occurs. The process very usually extends slowly in an excentric or serpiginous manner, leaving more or less marked cicatrices. Acne indurata, on the other hand, runs a more acute course, is painful and furuncular in aspect, occurs here and there without reference to pre-existing lesions, does not tend to form groups, heals up rapidly after evacuation, does not ulcerate nor tend to progress in a serpiginous manner, and frequently leaves no scar, or at the most one superficial and ill defined.

There is a papular form of erythema occurring at the menstrual epoch in women which is very usually confounded with acne. It is papular in character, though occasionally a pustule occurs. It appears on the face especially, but sometimes over the neck and shoulders. Its appearance is brusk, a few days before, during, or just after the menstrual epoch. It may consist of a few or of many lesions, which are frankly inflammatory and about the size of a small pea. They do not contain any comedo nor sebaceous matter; they itch and burn, persist for a few days to a week, and then subside, to reappear, however, at the time of the next period. This eruption, purely a reflex papular erythema, is usually regarded as an acne, but it should be strictly separated from it.

Prognosis.—The prognosis of an acne is favorable, and it can be said that all cases of the disease are curable, provided that the etiological factors existing in any given case are correctly estimated, and that the therapeutic efforts are carried out carefully and systematically by the patient. Acne also may and does disappear spontaneously, but that is the case when the one or other cause of the process has also been removed by course of time, improvement of general somatic conditions, etc.; but in view of the disfigurement, scarring, and changes which may occur in the skin from the disease, it is not advisable to wait for a spontaneous involution and to leave the patient without such proper care as will keep the process within bounds or gradually cause its entire cessation. In giving to a patient the prognosis of his or her acne, it should also be borne in mind that the same causes can produce the same effects, and that the complete or lasting cure of the eruption will therefore depend upon the individual's avoidance of the particular cause or causes or factors which have been found to be the basis for the existence of the disease in any given case. As to the length of time needed to cure a case, definite statements should not be made, since the duration of treatment will have to depend upon the response of the patient to the remedial agents made use of, the care and system with which the orders of the physician are carried out, the age of the patient, and particularly upon the possibility of removing the etiological cause or causes. Still, if not absolutely cured, no case should be dismissed as incurable, as all can be very materially benefited by proper care.

Treatment.—The methods, procedures, and remedies pertaining to the treatment of acne are manifold and various, being such as have to do with the general systemic health, and such as are local and applicable to the lesions themselves. In no sense of the term is there any specific medication in vogue or any drugs which can be regarded as specific, but every case has to receive such treatment as is indicated by the conditions found to exist. The statement just made refers especially to the internal and general systemic care, and in these particulars there is no disease in which, as it may be put, "individualization" of treatment is so necessary and called for. As a rule, no two cases can be treated alike, but each must receive such special advice as may be judged to be required, after a thorough investigation into the bodily and functional health of the patient, his habits, mode of life, diet, etc. Under these circumstances, should constipation be the factor in the case, it should be relieved by cascara sagrada, aloin, or some other remedy affecting the bowels, or by means of diet, proper exercise, cold douches, etc. Gastric or intestinal indigestion, fermentative processes, should be appropriately combated by dietary measures, the mineral acids, pepsin, etc., or by intestinal antiseptics—resorcin, sulphocarbolate of soda, salicin, charcoal, etc., and by such other measures as are indicated for these conditions. If debility or anæmia exists, then tonics are called for: iron, nux vomica, mercury, the vegetable bitters, feeding up, general hygienic methods, etc. The ferrum reductum, the carbonate, and the dry sulphate of iron have proved the best in my experience; hæmogalloi is particularly good when the stomach rebels against the other forms or when constipation exists. Except to tuberculous subjects, the iodide of iron should not be given, owing to the possibility of the iodine causing an eruption. When administering iron in cases of acne, the blood should be tested at the beginning of its use for its percentage of hæmoglobin, and retested every two to three weeks. Only in this way can certainty be had that the iron given is being assimilated and the blood state is or is not improving. Practically, Fleischl's hæmometer answers all requirements for testing. For strumous subjects, cod-liver oil, the hypophosphites, and the malt preparations are especially valuable. If, on the other hand, the acne occurs in gouty subjects, in those who are rheumatic or plethoric, who show evidences of deficient elimination, then alkaline mixtures, the potash salts—except the iodide and bromide—lithia, saline purgatives, colchicum, the salicylates, strict regimen, etc., are of the greatest service. In other words, every indication obtained from investigation of the patient's history should be duly estimated and receive such attention as it requires. It is useless to take up each seriatim, but all should be considered together in order to obtain as rapid progress as possible. The effects of calcium sulphide are illusory: none when given alone; but when exhibited together with dietary regulations, with other internal and local treatment, then improvement is seen in the case. But the result is obtained by those same measures when no calcium sulphide is administered. Arsenic is of use under certain conditions, but should not be regarded as a specific. As a rule, more harm than benefit is done by it. It is of value in certain cases in which anæmia or debility is present. In acute examples of the disease it is contraindicated, but it may be of benefit in those which are chronic in type. In those acnes which are complicated by a seborrhœa oleosa, or in which the process is sluggish and the lesions are indolent and leave congested stains, ichthyol internally is frequently of value. Beginning with five-grain doses three times a day, the amount may gradually be increased until gr. xv. ter in die are being taken. The drug is harmless, and for its best effects should be continued for several months. The question of diet is of some importance, but yet it should not be carried to an extreme, nor be regarded as the keynote of the treatment. In general, it may be stated that the diet should be composed of nutritious and easily digested food, and the various articles chosen or forbidden should depend to the greatest extent upon the digestive conditions in existence in the individual case under care. As a rule, I have found that it is advisable to forbid in all cases such articles as are comprised under the heading of sweets—desserts, candies, jams, preserves, pies, rich puddings, etc.—and also oatmeal, cheese, and nuts. Besides these, the diet should exclude stimulating, highly seasoned, and indigestible foods of all

kinds. Oysters are allowable, but lobsters and crabs will be found injurious. Clear soups, plainly cooked fish, roast and broiled and boiled meats, poultry and game, vegetables of all kinds, salads with plain vinegar and oil dressing are perfectly allowable for all cases, but at the same time the diet in these as well as in all particulars will have to be varied according to the necessities of the individual case. It may thus be found that in one milk, cream, butter, and fats will be beneficial, while in others they will be injurious; in some, a light claret or Rhine wine with the meals is distinctly beneficial, but in others all wines will be harmful. The same remarks are pertinent as regards beer, alcohol, tea and coffee; and on the whole, it may be stated that so far as diet is concerned, the same rule should be followed as has been laid down for the internal medication of acne—that is, it should be made to conform to the needs and the requirements of the individual afflicted, and not with a view of furnishing a specific regimen which shall of itself remove the affliction.

General hygienic laws should also be enforced. Exercise in moderation, but not, however, to the excessive point it is carried to-day, is of value, and so also is a change from a sedentary to an active life. Attention to personal cleanliness, to bathing, to early hours is clearly indicated, and dissipation and excesses of all kinds should be avoided.

The *local treatment* of acne is of equal importance with the internal and with the general care of the patient, for by these means the lesions of the disease can be removed and a healthy action of the skin can be brought about, and that even before the predisposing causes have been entirely disposed of. Many cases, moreover, can be cured by external treatment alone, but the writer has failed so far to obtain such a result from exclusively internal care. Both, in reality, should go hand-in-hand in order to get the best and most rapid cure of the process.

The first requisite in the local treatment is the use of soap and water. The surface of the skin, the seat of an acne, should be thoroughly washed night and morning. Any good toilet soap is all that is necessary, but a marble or sand soap has been recommended, as well as the Tr. saponis viridis. Superfatted soaps containing resorcin, ichthyol, sulphur, or mercuric chloride are also advised and used, but unless left on the surface over night, for instance, they offer little advantage over a plain, pure soap. Tar soaps are decidedly injurious in these cases, particularly if rubbed into and left on the skin, inasmuch as the tar may lead to the development of an acne picea. The water should be fresh and cool—about the temperature of the room; and in the writer's opinion and experience, hot water is injurious. Still, it is recommended by many as of value when applied for a number of minutes every night at as high a temperature as can be borne by the patient. Face steaming is also advised by some, the external remedy ordered being afterward rubbed into the skin. The writer certainly cannot vouch for the value of either one of these procedures, as he himself has never found them other than objectionable, increasing the amount of the eruption, inducing often a seborrhœa oleosa, accompanied by a relaxed condition of the skin and dilated follicular orifices, and causing the skin to have a sieve-like appearance. He has also found that these procedures were liable to cause a persistence of the process and to occasion frequent relapses. The same statements he would also make in regard to facial massage, so frequently recommended and used to-day, as in his experience he has found that it often causes an outbreak of acne and invariably aggravates a pre-existing one. Still all of these may in some cases be beneficial, but they certainly are not adapted for all, and should not be made use of as regular modes of treatment.

The comedones should be dealt with according to the directions given under that section. Curetting, both for them and the acne lesions, has been recommended by various writers—Hebra, Jr., Fox, Brocq; a dermal curette is used, and the face is gone over and thoroughly scraped once every week or ten days. The operation is rather painful, and though at times there may be rapid improvement, yet unless the patient is treated locally and internally at the same time, the relief is only temporary and a marked relapse is apt to follow. I wish to emphasize this statement because in a large number of cases which have come under my observation the previous treatment consisted solely of repeated curetting, and yet the relief afforded had been only temporary. Incision of all the lesions with a sharp-pointed bistoury and complete evacuation of their contents constitute very desirable steps. When the acne lesion has been quite large, or a veritable abscess has formed (through the coalescence of several lesions), or such an abscess has re-formed despite repeated openings with the knife, it is advisable to swab out the cavity with pure carbolic acid or with pure or fifty per cent. ichthyol. An ordinary match slightly sharpened is all that is necessary for conveying the antiseptic into the cavity. For lesions which are indurate, indolent, and obstinate, not containing pus, linear scarification has been recommended by Vidal and electrolysis by Brocq. The latter procedure invariably, however, causes more or less marked scars. For the obstinate lesions, the writer has obtained good results from the Emplastrum hydrargyri, or from pure ichthyol, or from the Unguentum hydrargyri nitratis diluted one-half or more. The local agents and remedies which have been used and recommended for the treatment of acne are innumerable and of the most various kinds. Yet all which will be found beneficial possess some degree of antiseptic action. The application chosen should vary according as the process is acute in character, or partakes rather of the indolent and chronic type. For the former, soothing applications should be used, and for the latter those which are stimulating and capable of causing a certain amount of active reaction in the tissues. In all cases liquid agents, solutions, etc., are far preferable, and only occasionally are salves and greases advisable. When the eruption is acutely inflamed, there can be used a lotion of ℞ Magnesiæ carbonatis, Zinci oxidi, āā gr. xv.; Acidi carbolici, gr. x. (or Acidi borici, gr. xv.; or resorcini, gr. v., etc.); Aquæ rosæ, ℥ i. M. Calamine may be substituted for the magnesia in the lotion, or aqua calcis can be used instead of the rose water. Other lotions suitable for these cases are: Liquor plumbi subacetatis diluti, or ℞ Bismuthi subnitratis, ℈ ij.; Ichthyoli, gr. xv.; Aquæ rosæ, aquæ calcis, āā ℥ ss. M. If the patient's skin is a dry and harsh one and a seborrhœa oleosa does not complicate the acne, then an ointment can be used. Suitable ones would be: ℞ Acidi salicylici, gr. xv.; Zinci oxidi, gr. xl.; Unguenti aquæ rosæ, ℥ i. M., or a two per cent. ichthyol ointment, or one containing acid. boracicum, three to five per cent., etc. The remedy chosen should be kept more or less constantly on the affected surface, in order to obtain the best results, and if possible it should therefore be used both day and night.

The large majority of acne cases being, however, of the chronic type, a greater choice of remedies is needed, and they are also required when the acute stage of the disease has subsided and the case has also become indolent in character and course. Of especial value are applications containing sulphur. It may be used in powder form mixed with starch in the proportion of one to four, or as high as one to one, that is, equal parts. But it is in lotions that sulphur is most useful, though many recommend it in the form of a ten-per-cent. ointment or paste. ℞ Sulphuris sublimati, gr. l. to ʒ ij.; Cretæ præparatæ, kaolini, āā ʒ ij.; Unguenti aquæ rosæ, ℥ i. M. Apply freely at night and remove with soap and water next morning, and then rub in well a two-per-cent. salicylic or other mild ointment, or apply a three- to five-per-cent. boric-acid lotion several times through the day. A very strong resorcin paste is also of benefit at times. Its strength may be from ten to twenty-five per cent. or even more according to the indolent nature of the case. It should be applied by the physician and its effects closely watched, as resorcin has a very powerful reactionary effect on the skin, and will cause a diffuse peeling

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