

enlargement of the supra- and infraclavicular lymph glands, but a careful review of the reported cases shows this to be a rare occurrence; nor could it, if present, be regarded as particularly significant, as such an enlargement might be caused by tuberculosis. Osler speaks of swelling of the axillary and even of the inguinal glands, but those cases are very exceptional.

Cough is often absent; when present it may be slight, with little sputum, or severe and persistent, with abundant sputum. A decided difference of opinion exists among the authorities on the subject of the sputum of malignant tumor of the lung. The majority of text-books on medicine lay great stress on this point and consider the characteristic sputum to be the most valuable of all aids to the diagnosis of this obscure affection. As to the kind of sputum, however, which is to be considered characteristic, the opinions differ widely. Some describe it as thin, mucoid, of purplish-brown color, the "prune-juice" sputum. Stokes found this present in ten out of eighteen cases, and thinks it of great diagnostic value. Others describe a reddish, jelly-like substance, sometimes likened to raspberry jelly, sometimes to currant jelly; still others describe it as bright green in color, with large green balls of muco-pus. It may be scanty and non-odorous or abundant and fetid. Blood is often found; Boyd found it in the sputum of more than half of his forty-nine cases. The truth is, that the sputum in malignant tumors of the lung depends not on the primary disease so much as on the extent and character of the bronchial inflammation, the amount of hemorrhage, and the formation of bronchiectatic cavities, etc. The color of the sputum, the presence or absence of blood, the consistence, odor, etc., cannot be regarded as diagnostic, for tuberculosis, bronchiectasis, pneumonia with slow resolution, lung abscess, may cause any of the different kinds of sputum which have been described as characteristic of lung tumor. The only kind of sputum which is absolutely pathognomonic is that which contains portions of the tumor. The references to these in the current text-books would lead one to infer that such sputum is not unusual; but a study of the literature reveals the fact that only five cases have been reported in which portions of the tumor were found in the sputum, three of these five being primary carcinoma, two secondary sarcoma. In the case described by Haempel, of secondary sarcoma of the lung following a primary bone sarcoma, fragments of tissue were found in the sputum, and these proved to be round-celled sarcoma. Eichhorst's case of secondary sarcoma was similar to this. The three cases of carcinoma were not quite so clear, for the sputum did not contain shreds of tissue but only single cells, resembling alveolar epithelium but much larger, multinucleated, and non-pigmented. The case of Krönig is interesting in this connection. He made an exploratory puncture to ascertain whether the dulness present was caused by a collection of fluid; and, failing to obtain any fluid, he made a second attempt with a larger needle and succeeded in removing bits of tissue composed of round cells. The growth proved to be a sarcoma.

The involvement of the pleura often gives rise to the most prominent symptoms, masking the underlying disease. By many authors the hemorrhagic character of the effusion is emphasized; but Moutard-Martin found hemorrhagic pleurisy in only twelve per cent. of the two hundred cases analyzed by him, and Aufrecht goes so far as to say that this form of pleurisy is more common in non-carcinomatous than in carcinomatous cases. The effusion may be abundant, sero-fibrinous, or purulent. The attempt to find cancer cells in the exudate has never succeeded.

So far, the symptoms have been the same for both the deep and the superficial tumors, but in considering the physical signs the two forms must be dealt with separately. Generally speaking, the subjective symptoms are more pronounced in the deep tumors, the physical signs in the superficial. In the deep tumors we have chiefly the disturbances due to pressure upon the nerves, vessels, bronchi, and œsophagus, while the physical signs

of a new growth may be entirely absent. Inspection sometimes reveals a fulness of the affected side with obliteration of the intercostal spaces, but this is more common in the superficial tumors. Later on, contraction of the connective tissue and collapse of atelectatic lung tissue may cause a narrowing of the chest wall. There may be diminished expansion of the affected side. Lividity of the chest on that side and of the corresponding arm has been observed, but usually only late in the course of the disease. Gradually increasing dyspnea is greater in this form than in the superficial, and is both inspiratory and expiratory; sometimes more extreme than is the case in tuberculosis.

Percussion reveals no abnormality in the early stages, but often there is a sudden development of dulness with loss of respiratory sounds, more absolute and more rapid than is usually the case in tuberculosis. Woillez speaks of a tympanitic note on percussion during the earlier stages due to loss of elasticity of the lung tissue, this note then changing suddenly to complete dulness.

The signs on auscultation are those produced by pressure on the bronchi—stridor or weakness or complete absence of the respiratory sounds. The normal tracheal breathing is also apt to be weakened. Curschmann has pointed out the fact that in tumor of the left lung the heart sounds are better conducted through the solid mass than they would be through a pleuritic effusion.

Pressure on the neighboring structures is responsible for the most prominent physical signs and symptoms in the deeply seated tumors. The heart may be displaced; the veins may be compressed and lividity with œdema of the upper, less often of the lower extremity, may result from this narrowing; pressure on the recurrent laryngeal nerve may cause changes in the voice; pressure on the œsophagus may cause difficulty in swallowing. As to this last, a slight compression is not unusual; an extensive compression, however, is very rare. Pressure on nerves other than the recurrent laryngeal almost never occurs. The growth may not only compress the vessels but may involve their walls and lead to rupture with fatal hemorrhage. Such extension has been observed in the case of the vena cava, the vena pulmonales, and the arteria pulmonalis; never in that of the aorta.

As to the diagnosis between carcinoma at the root of the lung and mediastinal tumor, the chief points are: that the mediastinal growth is apt to attain greater dimensions than the lung tumor, so that a large area of dulness under the sternum would more probably mean the former; that dyspnea develops earlier in lung tumor than in mediastinal tumor; and that compression of the vessels with lividity develops earlier in the mediastinal. Signs of compression of the vena cava superior coming on early and followed by dyspnea would, therefore, speak for a mediastinal growth; the reverse order is the rule in lung tumors. On the other hand, involvement of both recurrent laryngeal nerves, without signs of aortic aneurism and without compression of the vena cava superior, would speak for the lung tumor.

The second class of tumors, those which arise in the smaller bronchi or in the parenchyma and are more superficially situated, give often the clinical picture of pleuritis alone, especially when confined to the lower lobes. The line of dulness, which does not change with change of position, is a valuable diagnostic point. Dulness and loss of respiratory sounds are easier to demonstrate in these tumors than in the deeper ones; pain is more severe; but dyspnea and symptoms due to pressure on vessels and nerves are often entirely absent. The diagnosis between these more superficial tumors and tuberculosis is extremely difficult. The absence of tubercle bacilli in the sputum, the late involvement or non-involvement of the apex, the fact that dulness is apt to be greater in front than behind, and to be absolute with complete disappearance of respiratory sounds, these are the chief aids to differentiation between the two processes.

The diagnosis of secondary growths is necessarily simpler. Symptoms referable to the lungs arising in a patient with a previous history of carcinoma or sarcoma

would at once arouse suspicion and lead to a diagnosis which might not have been possible in the absence of a primary growth. However, in both primary and secondary growths inflammatory processes in lung and pleura may completely mask the true nature of the disease, and consequently it is not strange that many cases are reported in which the diagnosis of pleurisy with effusion was made; while there are others which were diagnosed as lung syphilis, lung abscess, gangrene, chronic pneumonia, tuberculosis, etc. Pässler records a case of fatal hemorrhage from the right branch of the pulmonary artery which had become invaded by a lung carcinoma, although there had been, up to the end, no symptoms that could be referred to the lung.

The duration of the disease is said to be from six to eight months, but Ziemssen reports a case which extended over several years, and which, strangely enough, improved temporarily on antisyphilitic treatment. On the other hand, Jaccoud reports one which was fatal within a week after the first appearance of symptoms.

TREATMENT of the disease is necessarily palliative only and must be directed to controlling complications and relieving pain. No possible therapeutics for malignant growths in the lung can be formulated.

Alice Hamilton.

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LUNGS, DISEASES OF: WOUNDS. See Thorax, Surgery of the.

LUNGS, PHYSIOLOGY OF. See Respiration.

LUNGS, SURGERY OF. See Thorax, Surgery of the.

LUPETAZINE—dimethyl piperazine, dipropylene diamine, [HN(CH₂CH₂)₂NH]—is a white crystalline powder of the same dosage and therapeutic uses as piperazine. W. A. Bastedo.

LUPULIN.—LUPULINUM.—"The glandular powder separated from the strobiles of" hops, U. S. P. The origin of this substance has been fully described under Hops. It is thus described in the Pharmacopœia:

"Bright brownish-yellow, becoming yellowish-brown, resinous, consisting of minute granules which, as seen under the microscope, are subglobular, or rather hood-shaped, and reticulate; aromatic and bitter.

"When lupulin is agitated with water and the mixture allowed to stand, no considerable sediment (sand, etc.) should be deposited. When ignited, lupulin should not leave more than ten per cent. of ash."

It is obtained from the hops by abrasion, and should then be stirred upon the surface of water to remove heavy impurities, with which it is often greatly adulterated. Such adulteration is readily detected by estimating the percentage of ash, for which the above-named ten per cent. is too liberal an allowance.

The differences in composition and action between hops and lupulin are chiefly those of degree. It yields about three per cent. of volatile oil and a proportionately greater amount of the bitter principle, but lacks the tannin. It is given in doses of from five to thirty grains. The Pharmacopœia provides a fluid extract and an oleoresin, the dose of the latter being from one to five grains.

Henry H. Rusby.

LUPUS ERYTHEMATOSUS.—A disease of the skin which has some of the clinical features of lupus vulgaris, but from which it is absolutely distinct in that the tubercle bacillus of Koch is now known to be absent from its lesions. The name was first used by Cazenave in 1850, and is to-day the recognized name for the disease throughout the world. Unfortunately, the nature of the process

is obscure, there being nothing in the histological appearance of the lesions which can be said to be distinctive of lupus erythematosus. The process commences in the upper corium and consists of an exudation of round cells. This has caused some investigators to regard the nature of the process as inflammatory, and they have accordingly assigned the disease a place in that group. Although this is a decided advance from the position of the earlier dermatologists who placed the disease among the cellular neoplasms, the truth is that even to-day one can find very little in the enormous mass of literature on lupus erythematosus that is available as a basis for a comprehensive definition of the disease.

In sharp contrast with the vagueness of its etiology, the clinical position, in dermatology, of lupus erythematosus is clearly defined. Typical examples of the disease are easy of recognition, for they all have certain marked characteristics. The lesion consists of areas of persistent erythema extending at the margin at a slow rate, and showing a marked tendency to sink in at the oldest portion, a phenomenon to which the name of central atrophy has been given.

SYMPTOMATOLOGY.—Lupus erythematosus, as it first appears, consists in the formation of one or several slightly raised areas of a bright red color, from the size of a pinhead to that of a bean. These areas do not entirely disappear on pressure, and their color is apt to vary a good deal from day to day, sometimes nearly fading out and at other times being intensely red. After the disease has remained in this state for an uncertain period peripheral extension occurs; that is, the sharply defined patch of erythema gradually increases in area through the involvement of the adjacent skin. At the same time the central area is seen to be covered with scales. These scales are usually small and very adherent. On attempting to remove them, one sees that they are attached to the sides of the mouths of the sebaceous follicles, which seem to be early affected in the disease by an abnormal hyperkeratosis that extends deeply into the glands. The rate of extension varies greatly, but the process has always a chronic course. Sometimes there is extension at one part of the border without any change at the remainder, and often the entire patch may remain for months without appreciable enlargement. The changes in the central area of the patches are equally uncertain, but usually the atrophic tendency can be recognized in most cases. This consists in a sinking-in of the patch in this region with a decided lessening of the color. When the lesion is fully developed, the atrophic skin is white and glistening, somewhat resembling a cicatrix, from which it differs microscopically and clinically by the absence of true scar tissue. Furthermore, it does not contract and displace the adjacent parts. In favorable cases the erythematous border may entirely disappear, leaving only the atrophic centre which is absolutely permanent. This termination is rare, however, most cases showing activity in some part of the integument for years. Sometimes the lesions are the site of other processes, among which true lupus and epithelioma are the most important.

The commonest seat of lupus erythematosus is upon the face. Here the disease often shows itself with absolute bilateral symmetry. The "butterfly lesion" of Hebra is classical and is formed by the involvement of the cheeks and the dorsum of the nose, the areas on the cheeks representing the two outstretched wings of the butterfly and that on the nose its body. At times in connection with this lesion, and at other times existing alone, lesions of the ears, scalp, eyebrows, and lips may be seen. Another occasional site for the disease is the back of the hands, the fingers, and the toes. The lesions in these different places are apt to be modified somewhat by the variations in the anatomy of the skin in the different regions. This is especially true of the scalp, where the characteristic red border is not well marked, and where the permanent loss of hair over the area of central atrophy is a predominating symptom.

Lupus erythematosus of the mucous membrane is ex-

remely rare. It has been reported on the buccal surfaces, and also on the conjunctiva in connection with the disease on the skin of the face.

Many attempts have been made to establish subdivisions of the disease in accordance with the different lesions which may be present. The most important classification is that of Kaposi, who recognized two forms. One is the discoid, of which the butterfly lesion is a type, and the other is the disseminate form, in which the lesions are multiple and their evolution is more rapid, some undergoing involution and others persisting. In these cases there are apt to be grave constitutional disturbances of a typhoidal nature, with a fatal termination.

PATHOLOGICAL ANATOMY.—Although many important histological features of lupus erythematosus have been definitely settled, in general the results of microscopical research have not been satisfactory. While one can say with absolute certainty that neither the tubercle bacillus nor any other micro-organism is present in the lesions, the fact remains that, so far as parallels can be drawn, the sections of lupus erythematosus closely resemble those of other inflammatory processes. The earliest lesion and the advancing periphery of the patches show no other departure from the normal than the existence of a small round-cell infiltration in the neighborhood of and around the capillaries of the upper third of the corium. These cells are often confined to the perivascular lymph spaces, and the general consensus of opinion is that they are continually passing out from the blood stream. That the blood-vessels are in a chronic state of dilatation is of course known from the clinical aspects of the disease. The fate of these round cells is not always uniform. Many probably re-pass into the circulation unaltered; others undergo fatty degeneration or are changed into a finely granular material, and then probably remain *in situ*, in this altered condition, for long periods.

The cells themselves are always uninucleated, their nuclei staining with great brilliancy. Multinuclear leucocytes are practically not found. When degeneration occurs, it does not attack any special collection of cells, but affects the cells here and there. This is an important feature because, although large collections of cells are frequently found, there is no evidence at any point of the influence of a toxin acting locally and causing cell destruction.

Passing to the older lesion we see these same cells often

massed together in the now greatly dilated lymph spaces, and single cells invading almost every tissue of the skin. They are found among the epithelia of the rete and of the hair follicles, in the sebaceous glands, between the muscle cells of the arrectors, and among the nerve fibres.

The vessels are in many places thrombosed and filled with collections of cells and detritus. Another change, probably peculiar to lupus erythematosus and dating from the early lesion, is the degeneration of the collagenous bundle, so that in many places the whole mass of connective tissue in the corium gives a positive reaction with elastic fibre stains, such as acid orcein. The rete Malpighi is greatly thinned in all stages of the disease and the spinous processes are practically flattened out. The coil glands are often dilated and contain casts, in which case the mouth of the gland is found plugged with horny tissue.

In the oldest atrophic portion the infiltration is always less apparent, but more distant regions, like the fat bodies, are found to have their capillaries mantled by the same round cells. Here the larger vessels and nerves are often reduced to mere fibrous cords and are recognized with the greatest difficulty. Most of the sinking-in of the atrophic portion

is due to the collapsing of the lymph and blood-vessels. In summing up the results of the microscopical investigation, we can say to-day that in all probability the primary lesion of lupus erythematosus is a paralysis of the muscular support of the vascular system of the skin. The exudation of round cells is distinctly a passive one. The dilatation of the blood and lymph spaces is permanent and results in grave disturbances of the nutrition of the area. The subsequent atrophy is due to a great extent to the obstructive processes in the vessels and a cutting-off of the blood supply.

ETIOLOGY.—Lupus erythematosus is one of the rarer diseases of the skin. It is somewhat more common in women than in men. It is essentially a disease of adult life, although cases have been reported in which the process started in childhood and in old age. While the exact cause is unknown, certain predisposing local influences have been noted. These are, on the one hand, congestive disturbances of the skin, the disease following: acne rosacea, eczema seborrhoeicum, erysipelas, and scarlet fever; and, on the other hand, direct trauma or injury of the corium, by frost-bite, tattooing, insect stings, and instrumental treatment of other diseases with the scarifier



FIG. 3256.—Lupus Erythematosus. Typical butterfly lesion (Hebra) of the cheeks and nose, with accompanying involvement of the eyebrows and lips. (Fordyce.)

or curette. It must be admitted, however, that the disease usually starts without known antecedents, and, so far as can be detected, in perfectly healthy individuals. Many other troubles have been reported as being associated with the disease, but they do not throw any light on the nature of the affection. Among these are uterine derangements, chlorosis, anæmia, and chronic nephritis. Some writers mention a lack of mental development, and state that melancholia, induced by the disfigurement of the lesions, is not uncommon.

The question of the relationship of lupus erythematosus to tuberculosis, while still kept open by the French school of dermatologists, has ceased to excite the same interest which it did ten years ago. Briefly, it may be said that the International Congress of Medicine, held in Paris in 1900, did not settle this point. At that time the microscope had furnished sufficient negative evidence, as regards the existence of the tubercle bacillus in the lesion of lupus erythematosus, to warrant the declaration that it was absent. The French school, however, claimed that the absence of the bacillus could not exclude tuberculosis altogether, for they had been able to detect true tuberculous deposits in other parts of the body in a sufficient percentage of cases to warrant a legitimate suspicion as regards the remainder; and consequently they held that this disease, as well as many others, was due to the circulation in the blood of the toxin of the bacillus, which, acting on the vaso-motor centres, was capable of causing the lesions. Diseases in this group are called "toxi-tuberculides," in contradistinction to true tuberculosis of the skin, in which the bacillus can be demonstrated. The group of toxi-tuberculides is a large one and embraces certain necrotic papular affections in which

not only does there seem to be more evidence of the local action of a toxin than we have in lupus erythematosus, but in which there is also a greater percentage of known tuberculous subjects. The opponents of the French school have failed to find in their cases the same high percentage of tuberculous patients, and hence do not recognize any necessary connection between the two diseases.

DIAGNOSIS.—Typical cases of lupus erythematosus do not present any great difficulty of diagnosis, but in the various stages of its evolution certain points of resemblance to other dermatoses may be a cause of confusion. This is especially the case when we are in the presence of an early lesion, covered more or less with scales, and when the atrophic nature of the process is not in evidence. Here we must exclude nearly all of the superficial scaly diseases before making a diagnosis. The late

lesions, especially those of the face, sometimes offer difficulties in diagnosis. Here the patches may at times resemble those of lupus vulgaris or of syphilis in the tertiary stage. Both these classes require special consideration, but the latter is the more important and will therefore be taken up first.

The late lesion is most often confounded with lupus vulgaris, especially in those cases in which true tubercles of lupus vulgaris have developed at some part of the lesion. In these cases the fact that lupus erythematosus never ulcerates or attacks the deeper tissue, as does lupus vulgaris, is perhaps the most important point in differentiation; but the patulous sebaceous follicles, the peculiar scale formation, and the appearance of the central atrophy in lupus erythematosus, which has little resemblance to the scars left by an extensive lesion of lupus vulgaris, are also important. In cases of the uncomplicated lesion of lupus erythematosus, the absence of the typical subcutaneous tubercle of lupus vulgaris renders confusion impossible.

From the serpiginous syphilide of the face, lupus erythematosus can be differentiated by its much slower evolution and by the absence of scar tissue. Furthermore, the tertiary lesions of syphilis show a tendency to extend by the formation of distinct foci and not by the even marginal progression of lupus erythematosus. If any uncertainty should exist, the history of the patient and the positive results of anti-syphilitic treatment would clear up the diagnosis.

From discrete patches of eczema and psoriasis lupus erythematosus can best be differentiated by a close examination of the skin after the forcible removal of the scales. Neither of the two processes ever ends in an

atrophy of the skin, nor do they show the extension of the scale formation into the mouths of the sebaceous glands. On the other hand, the pathognomonic sign of psoriasis, which appears on the tearing off of its scales and consists in the opening of the finger-and-toe processes of the corium as bleeding points, is never seen in connection with lupus erythematosus. Further points of differentiation from eczema are that the history of both moisture and itching is rarely absent in eczema, and, besides, the border line between eczema and the healthy skin is not so sharply marked as that in lupus erythematosus.

From tinea trichophytina, lupus erythematosus can be differentiated

by the facts that the lesion starts at a late period of life, and that the microscope does not reveal the presence of mycelium and spores.

PROGNOSIS.—The prognosis of lupus erythematosus is

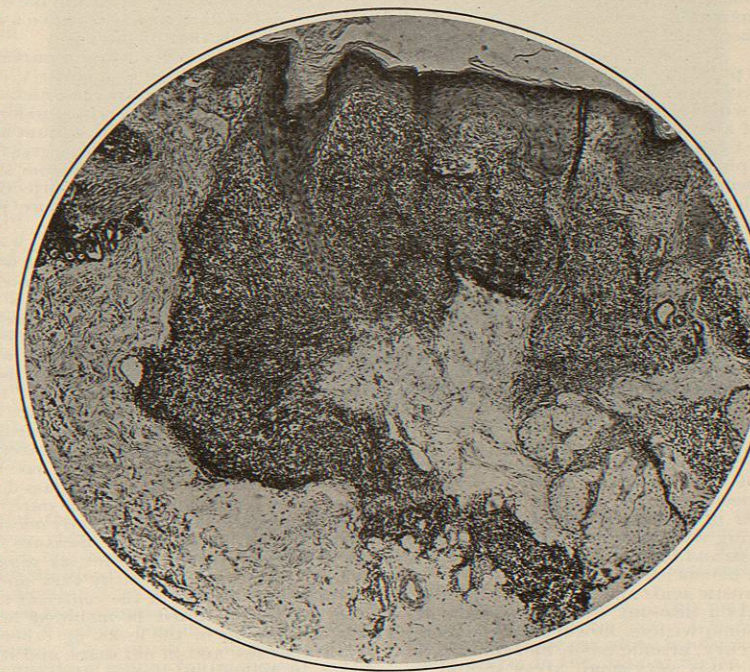


FIG. 3257.—Lupus Erythematosus of the Cheek, at the Height of the Erythema. The section shows an extensive focus of infiltration, with two open capillaries; a plug in orifice of sweat duct; only slight atrophy of epidermis. (Fordyce.)

good as regards both the general health and the outcome of any rational treatment. The chances of tuberculosis of the lung developing are slight, but should be borne in mind. Small patches offer an excellent opportunity for removal, and the larger superficial lesions usually yield to mild treatment. Even the much raised discoid lesions often disappear of themselves. The two unfavorable features of the disease are its tendency to relapse and the amount of time required for treatment. An exception to a favorable prognosis is in the acute type of Kaposi. This is very rare and but one case has been reported in the United States.

TREATMENT.—While there are no known internal remedies that have a specific influence on the lesions of lupus erythematosus, a careful survey of the general condition of the patient is most desirable. A tonic or antituberculous treatment is often indicated. Articles of food and drink which cause a temporary flushing of the face should be avoided, and the patient should be instructed to guard as far as possible against the extremes of heat and cold. A number of observers have from time to time reported the amelioration of the trouble during the administration of certain remedies. Among them are the iodide of potassium, iodoform, arsenic, ichthyol, and the salicylate of sodium.

The external treatment is of great importance and, for convenient consideration, may be divided into the following sections: (1) The application of soothing remedies; (2) the use of stimulating applications; (3) surgical interference.

Soothing remedies are always indicated when there is much hyperemia of the skin. Small young lesions frequently disappear under this treatment alone. It is also useful when the lesions show unusual vascularity or a tendency toward inflammation, and as an after-treatment when the skin has been artificially stimulated in the course of treatment. The soothing preparations employed are astringent powders, lotions, and simple ointment, such as are recommended for the treatment of acute dermatitis. Powders containing oxide of zinc and the common washes of zinc and calamine are much used. Compression obtained by the application of collodion and ichthyol or by strapping the lesions with zinc oxide plaster is sometimes beneficial.

Of the many stimulating remedies the most useful is the tincture of green soap. This is applied daily by rubbing well into the patch and then washing with water. A slight grade of inflammation is set up, which in turn can be treated by some soothing lotion. This treatment is especially applicable in lesions with excessive scaling of the follicles. By it the plugs in the sebaceous glands are removed and a great improvement in the appearance of the lesions on the face can be obtained. Care should be taken that the applications are not too prolonged or too severe, for the epidermis over the patches is extremely thin and sensitive. After the scales and plugs are removed, they can often be kept away by the application of Lassar's paste containing salicylic acid. Other preparations of value in this class are ointments containing sulphur, tar, oil of cade, mercury, ichthyol, and resorcin. Cases have been reported as cured under the continuous application of mercurial plaster. In very indolent patches painting with pure carbolic acid or with glycerin in which iodine and iodide of potassium are dissolved has been found beneficial.

The treatment by caustic acids and alkalis is obsolete, having been discarded on account of the excessive destruction of tissue. Some writers, however, recommend the acid nitrate of mercury, arsenic paste, and chloracetic and pyrogallic acids. Only very small areas should be treated at a time if these remedies are used.

Treatment by surgical means is often useful, especially the method of linear scarification. This does not differ in any way from the same method used in acne rosacea or in lupus vulgaris. It consists in making parallel cuts through the patch and carrying them a short distance outside it, and then in making another set at right angles to the first. Bleeding should be encouraged and pressure

made if the patch is much raised. This treatment is not difficult and gives exceedingly good cosmetic effects. Other methods are: curetting the tissue away *en masse*, and destroying it by the electric cauter. Neither is of much value. During the past few years cures have been made by both radio- and phototherapy.

Oscar H. Holder.

LUPUS VULGARIS.—Lupus vulgaris is a cellular new growth of the skin or mucous membrane due to the direct inoculation with the tubercle bacillus and to the peculiar formative reaction of the connective tissue which follows the infection. Neither histologically nor in respect of its intensely chronic course does this form of tuberculosis of the skin differ from the chronic form of tuberculosis situated in other parts of the body, and hence, as elsewhere in tuberculosis, the lesion of lupus vulgaris starts by the development of typical tuberculous tissue. This primary efflorescence, or lupoma, consists of several brownish-red to yellow areas, from the size of a pinhead to that of a pea, situated in the deeper parts of the corium, and, when uncomplicated by secondary changes in the skin, the lesion is easily recognized by its peculiar characteristics. The nodules are deeply seated in the skin and cause no apparent tumefaction. When pressed upon with a piece of glass, they lose their redness and become either brown or yellow, a color due to necrotic changes at the centre of the nodule. In consistency they are much softer than the surrounding skin and are easily penetrated by any fine blunt-pointed instrument. The evolution of the nodules is extremely slow, but in time they always disappear by absorption, leaving scar tissue. The disease itself spreads by the formation of new foci at the periphery and by invading the deeper tissues. The disease on the face seems to have a special predilection for cartilage, as that of the nose.

While many lesions of lupus pursue an uninterrupted course to the formation of a cicatrix, others are markedly modified by secondary changes which occur in and around the nodule and in the overlying epidermis. The varying degree of involvement of the corium and of these secondary changes may give to lupus a great number of clinical pictures, and it has been the custom to subdivide the disease by the addition of Latin adjectives, which merely designate the chief clinical feature present. The more important are as follows:

Lupus maculosus (Lupus planus).—This division embraces all lesions of lupus vulgaris which consist of the uncomplicated efflorescence of the nodules. The disease begins by the appearance of only a few tubercles, but before many months have elapsed the end product is apparent as scar tissue. This scar tissue is very diffuse and even, for the tubercles occupy the whole depth of the corium and have little or no healthy tissue between them. The disintegration and resorption of the tubercle, on the other hand, do not always take place in a uniform manner. Although the scar tissue is situated in the main at the periphery of the lesions, it rarely happens that the central area of a lupus scar is so entirely separated from them that pressure with glass does not reveal their presence in a partially absorbed state. Their existence in some part of the lesion is not only necessary for diagnostic purposes, but it affords a measure of the activity of the process at any local point, as regards both the invasion of the adjacent healthy skin and the likelihood of further development at the centre of the lesion.

In this group must be included lupus vulgaris when it is developing in the lesion of other diseases, as lupus erythematosus, and in old scars, and it is usually the condition in which the disease primarily appears when the other forms are to be the ultimate product.

Lupus nodosus (L. tuberculatus, elevatus, tumidus, non-exegens, non-ulceratus).—This clinical type follows the macular variety and is due to the tendency of the individual nodules to remain *in situ* unchanged. The formation of new granulomatous foci predominates and the skin is elevated into a mass of papules and tubercles. This form pursues a remarkably slow course, but rarely

ulcerates. Sooner or later the involution of the lupus tissues begins and terminates in the formation of a thick and uneven cicatrix.

Lupus exulcerans (L. crustosus, rodens).—This division includes the moist patches of lupus. The overlying epidermis loses its protecting character and allows the lupomata to be exposed to external influences. In the milder cases an impetiginous or eczematous condition may be present, with the formation of crusts and scales, or the epidermis may be entirely destroyed and a true ulcer result.

These lupus ulcers, owing to their resemblance to certain forms of syphilis and epithelioma, are sometimes difficult to diagnose.

They may be covered with crusts or their floor may be the seat of an exuberant outgrowth of granulations. Their border is the most characteristic feature, and it is there that the signs upon which a diagnosis may be formulated are most evident. Owing to the extremely slow and irregular necrosis of the lupomata, this border is irregular, non-elevated, and soft, and the individual lesions are usually visible.

Lupus serpiginosus.—This name is given to those lesions which have a tendency to rapid extension at the periphery. The lupomata evolve completely into cicatricial tissue, and we have, as a result, superficial scars of great size which show few or no nodules in the centre but many at the periphery. This group embraces the most disfiguring cases that are seen on the face and scalp and which are extremely rebellious to treatment. This form is also common on the arms and legs.

Lupus hypertrophicus.—In this type of the disease an exuberant growth of connective tissue entirely overbalances other tendencies and the lesion becomes covered with soft exuberant granulations which bleed very easily. This form is most often seen following the ulcerated lesions on the nose. In these cases the granulations are not covered with epithelium, nor do they contain the tubercle bacillus or the lupoma. They must be looked upon as the results of secondary infection, for a similar condition appears in connection with syphilitic and other ulcerations. The name hypertrophic is also applied to cases in which epithelial hypertrophy appears. This may be present in very small lesions and consists in the development of verrucous growth above the level of the lupoma. In certain cases, in which the disease is located on the leg, the growth may be so excessive as to produce an appearance like elephantiasis.



FIG. 3258.—Lupus Vulgaris (six years' duration). The type is that of a young macular lupus, with a tendency to epithelial hypertrophy. (Fordyce.)

Lupus of the Face.—The face is the most frequent seat of lupus, and here every form of the disease appears. It has been supposed that infection often takes place through the lymph channels of the nostrils, but it is more likely that the peculiar anatomy of the skin of Hutchinson's flush area has more to do with the determination of this frequency. The area of the nose is undoubtedly the starting-point in most cases, and, as Besnier has asserted, the disease is accompanied and often preceded by an obstinate crusting inside the nostrils. Often it happens that before the disease has spread beyond the region of the nose, serious involvement and destruction of the nasal cartilages has taken place. This may not be evident

during the earlier stages of the disease, for the nodular and hyperplastic types of lupus are usually present, and the crust and outgrowth of granulation tissue are apt to cover up the extent of the destruction. When the cicatrix is formed, however, the loss of cartilage is apparent even when the lesion has been a very small one. After an extensive lesion of the nose, the resulting deformity is distinctive, giving to the nose a peculiar lopped-off appearance. Contrary to what happens in syphilis, the nasal bones remain intact, this fact being an important means of distinction between the two diseases.

Lupus of the Upper and Lower Lip.—This region may be the primary seat of lupus, but is more often involved in the extension of the disease from the nose and cheeks. The lips early become greatly swollen, deeply fissured and crusted, and they bleed easily. Extension to the inside of the mouth is invariable, and in this locality the dis-

ease shows itself by the usual manifestations of lupus of the mucous membrane. The deformity caused by the cicatrization is extreme. The mouth is greatly reduced in size and the jaw is practically ankylosed by the tightness of the scar.

Lupus of the Auricle.—This may be primary or secondary to a lupus of the face. It is sometimes symmetrical, but usually one ear alone is affected. The process sometimes starts in the lobular region where the changes are most characteristic. Owing to the looseness of the connective tissue of the lobules there is great swelling of this part of the ear, and the lobule hangs down as a purplish pear-shaped tumor from the much hypertrophied auricle. The skin is very thin and transparent, and is apt to be in an eczematous state. The process ends in the entire destruction of the auricle, the scar sometimes completely occluding the external auditory meatus. Extension into