A RARE FORM OF SUPPURATING AND CICATRIZING DISEASE OF THE SCALP

(PERIFOLLICULITIS CAPITIS ABSCEDENS ET SUFFODIENS)*

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A chronic inflammatory disease of the scalp, primarily perifollicular, leading to suppuration and extensive undermining of the involved area, was given the name Perifolliculitis capitis abscedens et suffodiens by E. Hoffmann. He presented such a case before the Berlin Dermatological society, Nov. 12, 1907. Hokmann's patient, a man aged 25, had then been afflicted for a year, and showed "on the occiput many (about 20) nearly hazelnut sized, pale, hemispherical elevations, hairless or covered at the borders with sparse, short hair stumps, from which on pressure pus exuded and into whose fistulous openings the sound could be introduced up to 4 or 5 cm. Beside these closely crowded tumors with smooth, pale, grayish-red surfaces, which gave the scalp a rough, uneven, mammillated appearance, there were a few disseminated pustules and crusts, pierced by hairs, and isolated, small coin-sized, smooth scars. Healing resulted in further scar formation and was hastened by a 10 per cent. sulphur-zinc paste. Microscopically there was no fungus; cultural investigation for sporotrichosis proved negative. There was, then, a suppurating folliculitis, undermining the scalp, with formation of fistulae and termination in cicatrizing alopecia."

The American, and to the best of our knowledge, the British, French and Italian literature contains no record of this entity; but in the German dermatologic publications we find that A. Ruete [1] has carefully described the disease in an article which deserves to be reviewed in detail. In the introduction he mentions the numerous processes leading to scarring of the scalp or to alopecia associated with scarring, touching on syphilis, tuberculosis, favus, lupus erythematosus and the innominate cicatricial alopecias of Besnier, which include folliculitis decalvans

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1. Ruete, A.: Ein Fall von Perifolliculitis capitis abscedens et suffodiens. Dermat. Ztschr. **20**:901, 1913.

and the pseudopélade of Brocq. To this list he adds ulerythema sycosiforme, also the scarring and alopecia which succeeds furunculosis, and lastly what has been called "a deep form of acne decalvans," but is better designated, according to Hoffmann, as "perifolliculitis capitis abscedens et suffodiens."

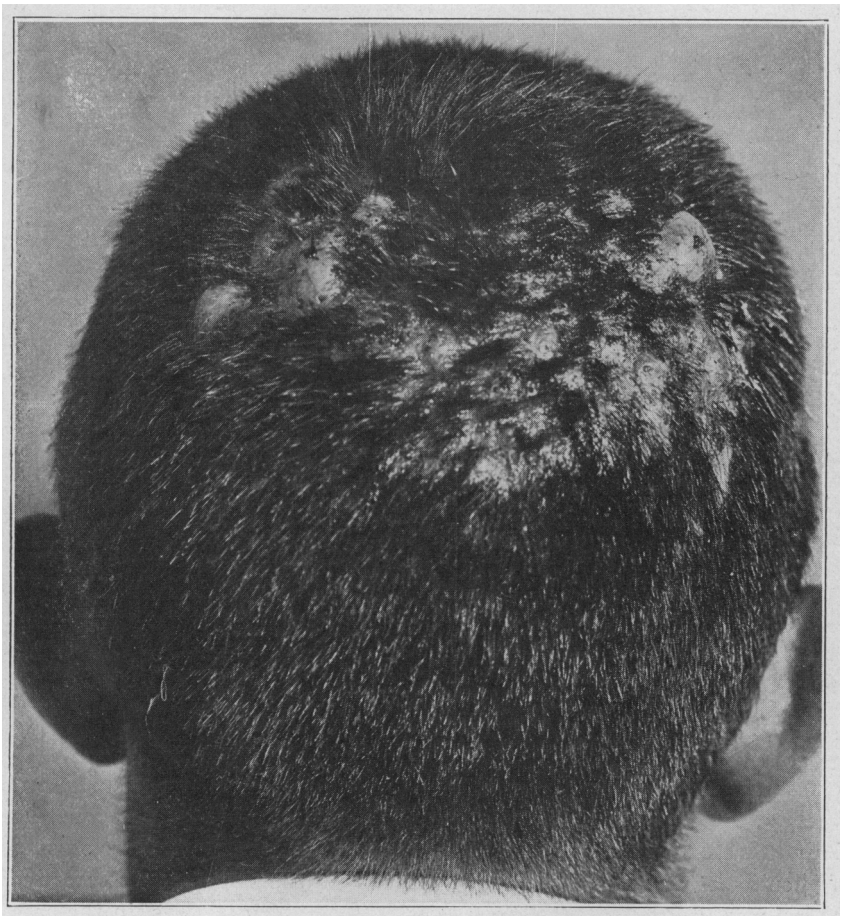

Fig. 1.—Numerous isolated and confluent serous and seropurulent, hemispheric lesions, with crust formation due to a serosanguineous exudate.

NOBL'S CASE

So little is definitely known about this last-mentioned process that Ruete published a detailed presentation and analysis of a case he had observed and treated. Before describing this case a brief review of similar instances is given. These are three in number, including Hoffmann's, already mentioned. Nobl, Oct. 26, 1904, presented a case before the Vienna Dermatological Society, which showed a deep folli-

culitis of the scalp with baldness: "In a man of 34, the vertex and adjacent occiput were the sites of nodules, isolated and grouped, hempseed to pea sized, reddened and partly faded, projecting above or level with the skin, whose summits were occupied by loose, easily detachable hairs. With such firm, sensitive, perifollicular nodules alternated hazelnut sized, sharply circumscribed, hairless, elevated areas of a spongy feel, arched like the surface covering of a superficial atheroma, of smooth and glossy aspect. Moreover, in irregularly outlined spots of fingernail to small coin size, there was an atrophic shrinkage of the scalp and a scarring destruction of the sebaceous glands. In such reddened retracted spots one saw the sparse hairs springing up from the network of skin furrows. Clinically and histologically the process showed many analogies to the initial forms of dermatitis papillaris

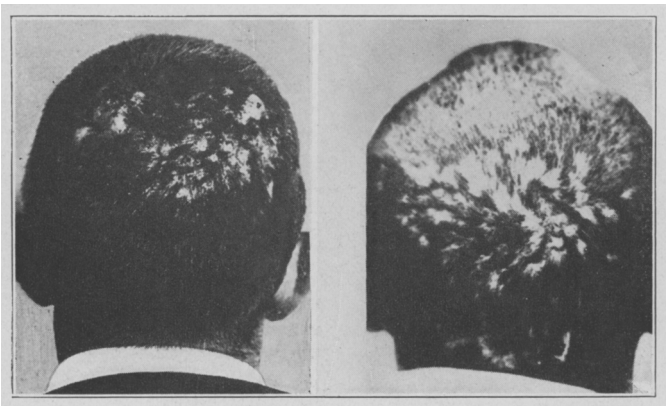

Fig. 2.—Author's case (left) and Ruete's case, showing the remarkable similarity between the two eruptions.

capillitii, without sharing its fate. The histologic preparations showed that here also there was a marked exudative perifolliculitis about the hair follicles and glandular adnexa. But while in the sclerosing follicultis a proliferation and thickening of the cutaneous connective tissue was brought about through the inflammatory process, in the case under discussion the perifollicular infiltrate, formed principally of leukocytes, terminated in deep-seated abscesses, which after spontaneous rupture or operative opening left bald atrophic or thickened patches corresponding to their extent. Therefore, according to the anatomic findings, the process may be called a deep folliculitis causing baldness."

SPITZER'S CASE

Spitzer [2] recorded a case of "Dermatitis follicularis et perifollicularis conglobata (Lang)" which, beside the changes on the skin of the body

2. Spitzer: Dermat. Ztschr., 1903, p. 109.

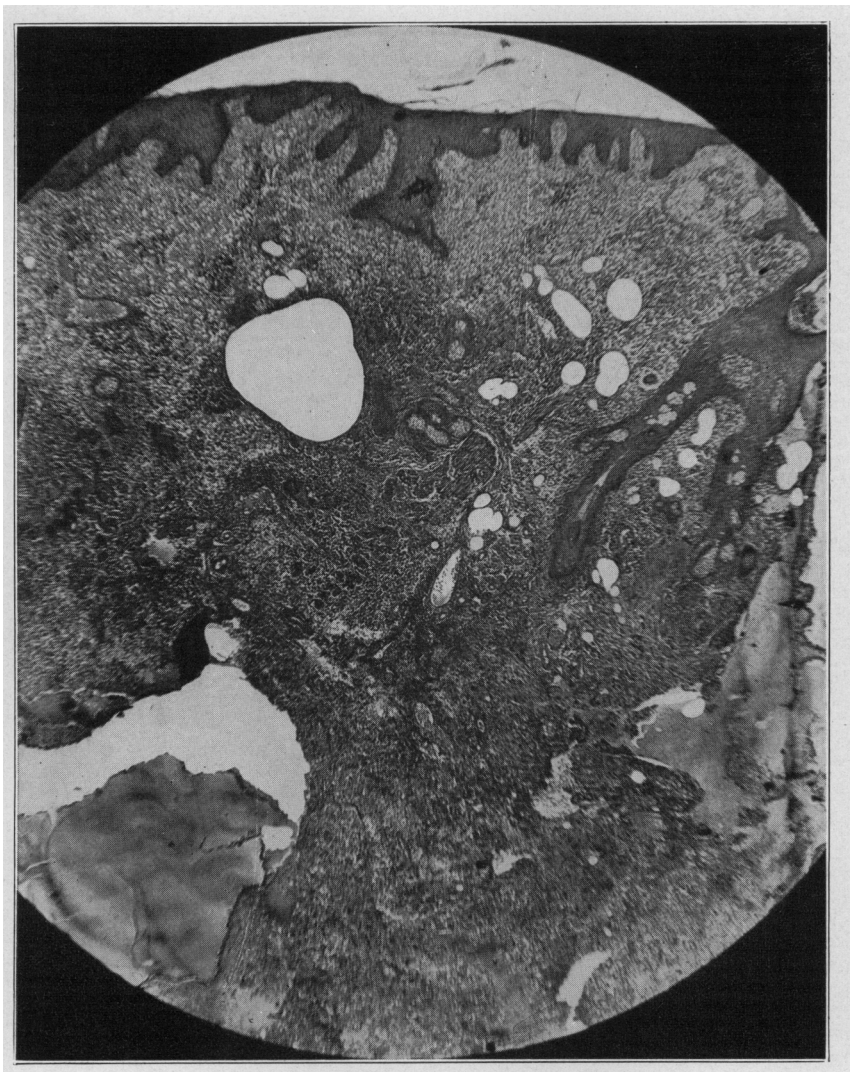

Fig. 3.—Low power; a general view. Infiltration occupying chiefly the middle and deep cutis; dilatation of lymph spaces and lymph vessels of the middle and upper portion of the corium; disintegration of the deep portions of the corium; dilatation and perivascular infiltration of vessels throughout the tissue.

described by Lang, showed a process on the scalp which was very similar to that obtaining in Ruete's case.

In this patient, a 24 year old weaver, there developed during his military service large, red nodules on the back, the size of lentils, which ruptured themselves and discharged pus. Later, similar nodules and abscesses appeared on the buttocks, the neck and the chest. In the course of a year he had to have more nodules opened in the axilla, on the nape of the neck and the occiput.

The patient, fully disrobed, presented a most striking appearance which cannot readily be illustrated here. All over the body of the otherwise well nourished patient, from head to toes, were a goodly number (about 100) of lesions, from millet seed to palm size, which could very well be followed in their evolution. They began as pinhead sized nodules of bluish-red color, some having comedones in their centers. In other lesions no comedones were to be found. Painless, notably without the signs of acute inflammation, they grew larger, and when they had reached about the size of a bean, were observed to break down internally. As a rule the skin was perforated in one or more places. In many areas, both on the trunk and on the extremities, the nodules becoming confluent, formed groups and presented the aspect of a smooth, bluish-red tumor which on pressure discharged pus from several often remote (peripheral) openings, an appearance reminding one of a turtle as it protrudes its legs from beneath its shell. Also on the trunk and in the axillæ there were countless scars, from the size of a millet seed to that of a dollar, at times blue-red at others white, with pigmented spots, in places resembling keloids, and in their serpiginous arrangement recalling gumma.

There was a different picture presented on the occiput and in the axillae. In the first place the skin was unmistakably undermined, cavities dissected by the pus ramifying in all directions, bridged by thick swollen scars, forming a picture not unlike dermatitis papillaris of Kaposi. The introduced probe could reach far in all directions and emerged through an opening several centimeters away, which at first seemed to have no connection with the first. Similar, but not so marked, were the conditions in both axillae.

For a searching histologic investigation Spitzer had unfortunately taken no nodules from the scalp, which would naturally have interested us most, but he obtained one bean sized nodule from the skin; this lesion fluctuated and had not ruptured. He found that the process originated from the follicle, that the neighborhood of the follicle showed inflammation and that granulation tissue had formed, reaching far into the connective tissue. By the advent of a bacterial infection as a secondary factor, suppuration resulted, with breaking up of the granulation tissue; extension of this process led to a deep disintegration and undermining of the subcutaneous tissue, terminating in extended, often keloidal scar formation.

RUETE'S CASE

Ruete's case is described as follows:

The patient was a man of 20 years. The parents and seven brothers and sisters were living and well. Three brothers and sisters had died in the first year of life from diseases of childhood. The patient himself had never been seriously sick. For three years he had had an acne of the face and back, sometimes better, sometimes worse, to which he had paid no special attention.

Fig. 4.—Medium low power; dilated lymph vessels filled with mononuclear leukocytes. The tissue is edematous and infiltrated with plasma cells and polymorphonuclear leukocytes. Below and to the right of one of the dilated lymph vessels are seen three or four swollen endothelial cells.

One year previously there had appeared on the middle of the scalp several small red "pocks," which had gradually enlarged and multiplied. A large portion of them suppurated, then ruptured and covered the scalp with thick crusts. The whole affected area was most painful on pressure. The patient was a medium sized, powerful man, well nourished, and his internal organs were free from evidence of disease. There was no general glandular enlargement. The urine was normal. On the back and chest were many acne pustules and comedones. There was a moderate acne of the face.

The scalp presented many yellowish-red to livid nodules ranging in size from very small nodules to walnut size lesions. On the tops of the nodules there were no hairs; in the spaces between them the hairs remained. They were not fixed firmly in the scalp but could be extracted by the slightest pull. Some of the nodules felt firm but most of them showed distinct fluctuation. Their site of predilection was the occiput; from the vertex the lesions extended in arches to the ears and below to the hair line; the hairs of the neck were not involved. Some of the nodules or abscesses were capped by little pustules. Most of the abscesses seemed to communicate with one another, and to have caused an undermining of the scalp; for if one pressed on a nodule on one side of the scalp, pus would be expelled from one on the opposite side; also the probe could be passed for 5 cm. under the scalp. In their course many abscesses ruptured spontaneously, and thus a large part of the scalp was bedecked with crusts and brownish-red scabs. The whole occiput presented a picture resembling a mountain range; lump rose above lump; a few rose strikingly over the level of the others. The rows of elevations were separated by deep depressions.

The picture is that of a perifolliculitis capitis abscedens et suffodiens. But other conditions have to be considered: a beginning folliculitis sclerositans and trichophytia profunda. Sporotrichosis must be ruled out. The patient remained under our care from Oct. 2, 1912, until Nov. 30, 1912, and was then discharged as cured.

The opened abscesses discharged a thick pus or a bloody serous fluid, and the leukocytic content was large. Staphylococcus aureus could readily be cultured from it; but the most careful implantations of glucose-agar and Sabouraud's medium and inoculations of rats failed to reveal the presence of them. The crusts having been removed, a 10 per cent. sulphur-zinc paste was applied, which, together with a course of autogenous vaccine injections and fractional roentgen-ray treatments totaling two units, brought about a speedy cure. The acne of the back and face quickly responded to a peeling paste.

For histologic examination a nodule about the size of a hazelnut was excised in such a way that sound tissue on either side of the lesion was included. It was fixed in alcohol and imbedded in paraffin. The sections were stained with hematoxylin-eosin, polychrome methylene blue, and van Gieson and Weigert's stains. For bacteria stains were made by Gram's method.

Microscopically there appeared at either side of the section almost normal skin, with well-formed rete pegs, hair follicles and glandular structures. As the middle of the section was approached, the papillae were obliterated, the follicles and glands were entirely lacking, and the

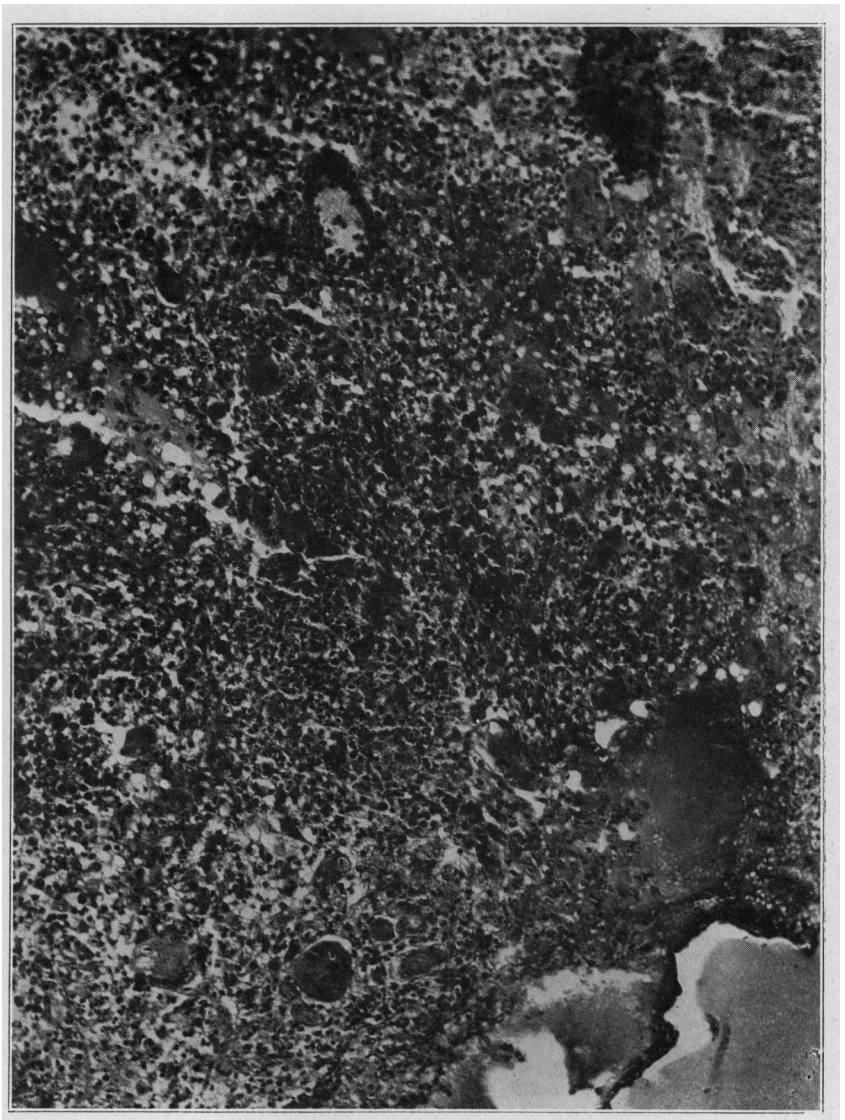

Fig. 5.—Low power; the polymorphism of the cellular infiltration and the breaking up of the collagenous tissue. See high power for cytology.

whole field was occupied by an apparently homogeneous, finely granular mass. The epidermis itself became thinner at the middle of the section, consisting of an ill-defined strip.

Under higher magnification, in the formerly apparently sound parts, there was a beginning small cell infiltration, especially in the perifollicular tissues. The hair was still in the follicle; but it was irregularly frayed out, and the papilla was occupied by a homogeneous, cell-free mass. The outer root sheath was partially destroyed and sparsely nucleated; here and there toward the periphery were collections of leukocytes which were a part of the infiltration that surrounded the follicle. This infiltration was composed partly of closely crowded mononuclear leukocytes. Since the leukocytes were found only in the outermost parts of the root sheath, while the inner parts were free, it was assumed that the pathologic process arose in the perifollicular tissues from which it then would invade the follicle itself. Therefore, the process was primarily a perifolliculitis, which terminated in a folliculitis.

The elastic fibers and the connective tissue bundles were still well preserved in this part of the preparation. But toward the middle of the section the latter were entirely lacking, in contradistinction to the conditions found in folliculitis sclerotisans nuchae, in which the involved region, with exuberant connective tissue growth, becomes sclerosed and eventuates in the well-known, almost board-like condition.

This part, on the whole, bespoke a fresh granulation tissue, with here and there a suggestion of tuberculous structure. As already noted, the epidermis was thinned to a few layers of rete cells. The papillary and subjacent regions were occupied by closely packed mononuclear leukocytes. There were many giant cells; several appeared in almost every field. Here and there one found the remains of glands and sparse remnants of elastic fibers which looked as though they had been torn apart and afterwards tied together, and were mostly tangled into knots. There was no normal connective tissue; but there were many capillaries within whose walls were countless polymorphonuclear leukocytes and eosinophil cells.

The Gram stain revealed goodly numbers of staphylococci in the follicles, in the perifollicular tissue and in the masses of granulation tissue. One cannot say whether these staphylococci were the primary agents of the disease, or whether they were later invaders that found a favorable soil in the inflamed skin.

SUMMARY OF CASES REVIEWED BY RUETE

Summing up the findings in these cases, Ruete finds "a singular and characteristic pathologic picture." It is "a severe affection of the

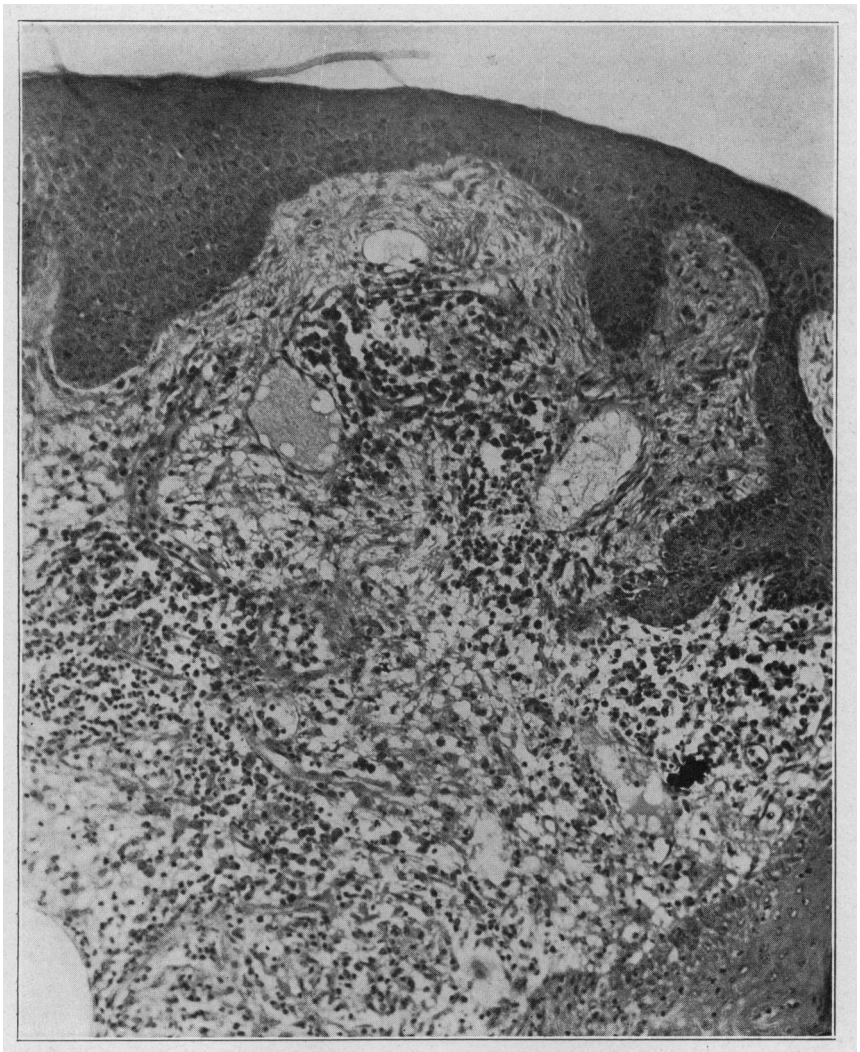

Fig. 6.—Low power; upper portion of cutis with dilated vessels containing polymorphonuclear leukocytes; perivascular infiltration of plasma cells and mononuclear cells, with edema of the connective tissue and some granular degeneration; dilatation of the lymphatics. Lower portion of cutis shows more infiltration with polymorphonuclear leukocytes.

occipital portion of the scalp, which consists in many large and small nodules, suppurating, becoming interconnected by burrowing, thereby undermining and excavating a large part of the scalp. They are hard to control by treatment, and leave, on healing, a flat, scarred alopecia in irregular spots, similar to that following psuedopélade."

In two of the four cases the process was not limited to the scalp, but was complicated, in one instance, by the presence of Lang's dermatitis follicularis et perifollicularis conglobata and in the other by acne vulgaris. It is suggested that these affections, preceding the occipital process, may perhaps be of interest etiologically.

The histologic examination indicated a disease process affecting the perifollicular tissue and the hair follicle, but which, unlike the folliculitis sclerotisans nuchae of Ehrmann, does not lead to a connective tissue proliferation. The resemblance to this disease is apparent in all the cases described as perifolliculitis capitus; but they cannot be identified with it, on account of a difference in pathology, which is evident histologically, and on account of the difference in the response to therapy of the two conditions. The other points in differential diagnosis have already been considered in the description of the cases, and it has been said that a fungus infection is to be ruled out by suitable laboratory methods. After the healing of the nodules and abscesses, the disease assumes an aspect which can easily be confused with the acné décalvante of Quinquaud. Also the pseudopélade of Brocq gives us approximately the same picture.

SIMILAR SKIN AFFECTIONS

Concerning acné décalvante, Boeck writes: "In the type described by Quinquaud the follicular changes assume various forms. Usually they are punctate pustules, like miliary abscesses, at first pinhead or even smaller, pierced centrally by an easily removable hair. The hair is soon destroyed and falls out spontaneously. It does not regrow, for the inflammatory process has produced an absolute atrophy of the hair follicle and its adnexa. The skin at the point attacked, after healing has occurred, is smooth, pale whitish, atrophic, thinned and depressed; it often shows the changes of scarring and might recall to a slight extent the scarring of favus. The hairless spots are irregular and of different sizes, but they do not usually attain dimensions which could be compared with those of pélade. They are scattered here and there over the skin with no tendency to unite in primary and secondary groups. Each little pustule is individual, and does not form a reddened, indurated, confluent mass, by coalescing with neighboring elements, as do the lesions of sycosis."

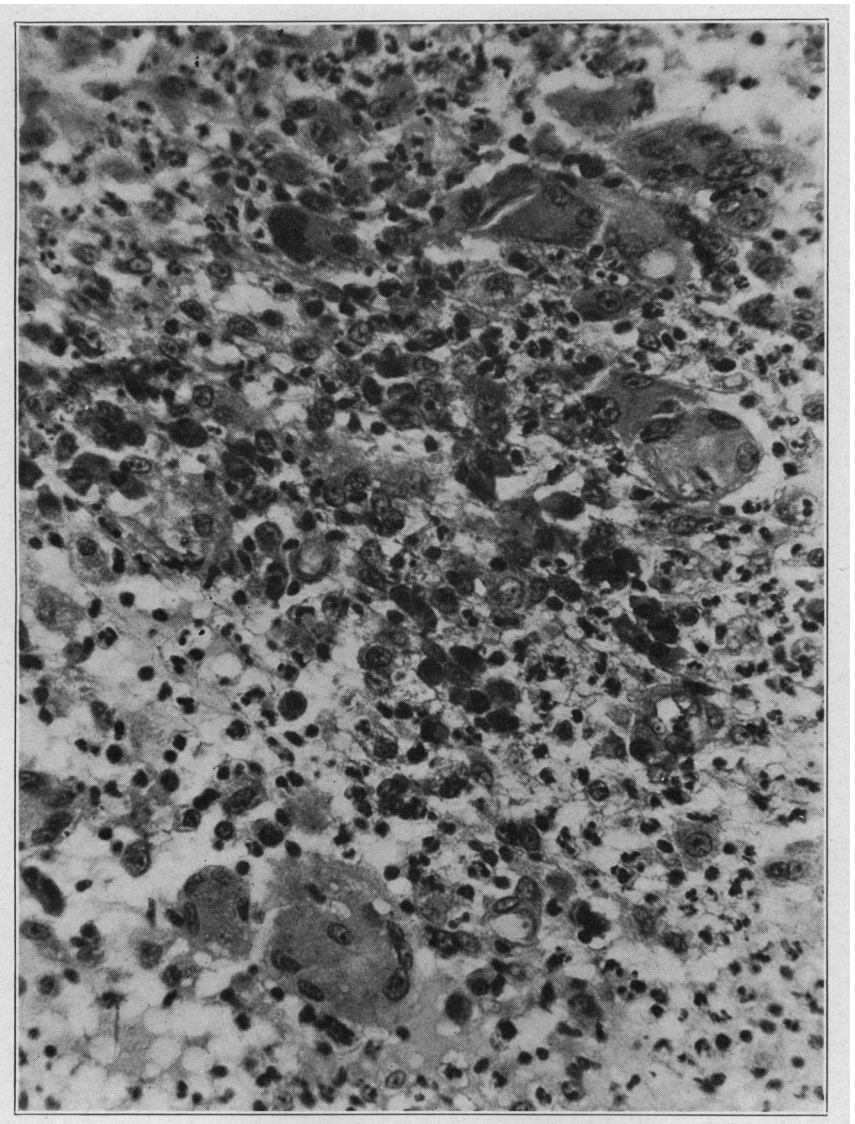

Fig. 7.—High power; types of cells: chorioplaques, giant cells, plasma cells, polymorphonuclear leukocytes, fibroblasts and round cells; degeneration of protoplasm of the chorioplaques; disintegration of the connective tissue.

The acné décalvante of Lailler and Robert is clinically identical with this form. But these authors state that after the first period, in which alopecia follows the acne-like pustules, the alopecia can extend further without being preceded by apparent acne pustules.

We have here, then, a picture which in its outcome is identical with ours. Here, as in our case, bald spots persist, whitish to pale-red in color, slightly atrophic, thinned, depressed and with slight scarring changes.[3] Only in their beginning stages are the two forms entirely different. While Quinquaud's little primary pustules are pinhead size and smaller, and show no tendency to confluence, there is presented in our case a nearly opposite picture, with abscesses approaching walnut size, with a marked tendency to confluence, thus forming the above-mentioned peculiar picture of burrowing, and undermining the scalp.

An appearance very similar to that of the acné décalvante is presented by the pseudopélade of Brocq, with its many little bald spots occupying the vertex and the upper and middle portions of the occiput. These spots, too, are white or pale red, smooth and rather atrophic, of pinhead size and larger. They tend to become confluent, forming areas which enlarge as the disease progresses and approaching the size of the palm of the hand. The difference in the two diseases lies in the fact that pseudopélade progresses unheralded and that we never see suppuration of the follicles; at most one can now and then discern a slight reddening of the follicular mouth. There is, then, a marked difference in the mode of development of the two diseases, despite the fact that the end-results in both are about the same. At the beginning, perifolliculitis capitis resembles folliculitis sclerotisans nuchae which, however, has not this marked tendency to undermining and which, furthermore, does not share its ultimate fate, but nevertheless seems to form a connecting link between the two affections; it has much in common with both forms but cannot be identified with them.

The disease which Lang called dermatitis follicularis et perifollicularis conglobata is characterized (according to Spitzer) as a syndrome occurring only in persons with a coarse skin, with discrete, paired or grouped comedones, from which the pressure-atrophy comedone scars appear. One sees in the skin countless white, sinous or serpiginous depressions, which, if one is not familiar with the picture, would lead to the diagnosis of "artefact." The disease is characterized as a severe clinical syndrome, since the process may spread over a large part of the body surface, and since it causes deep destruction of the integument. Its nature is chronic and its course progressive.

3. For comparison, see the illustrations in Brocq's Pratique dermatologique **1**:780.

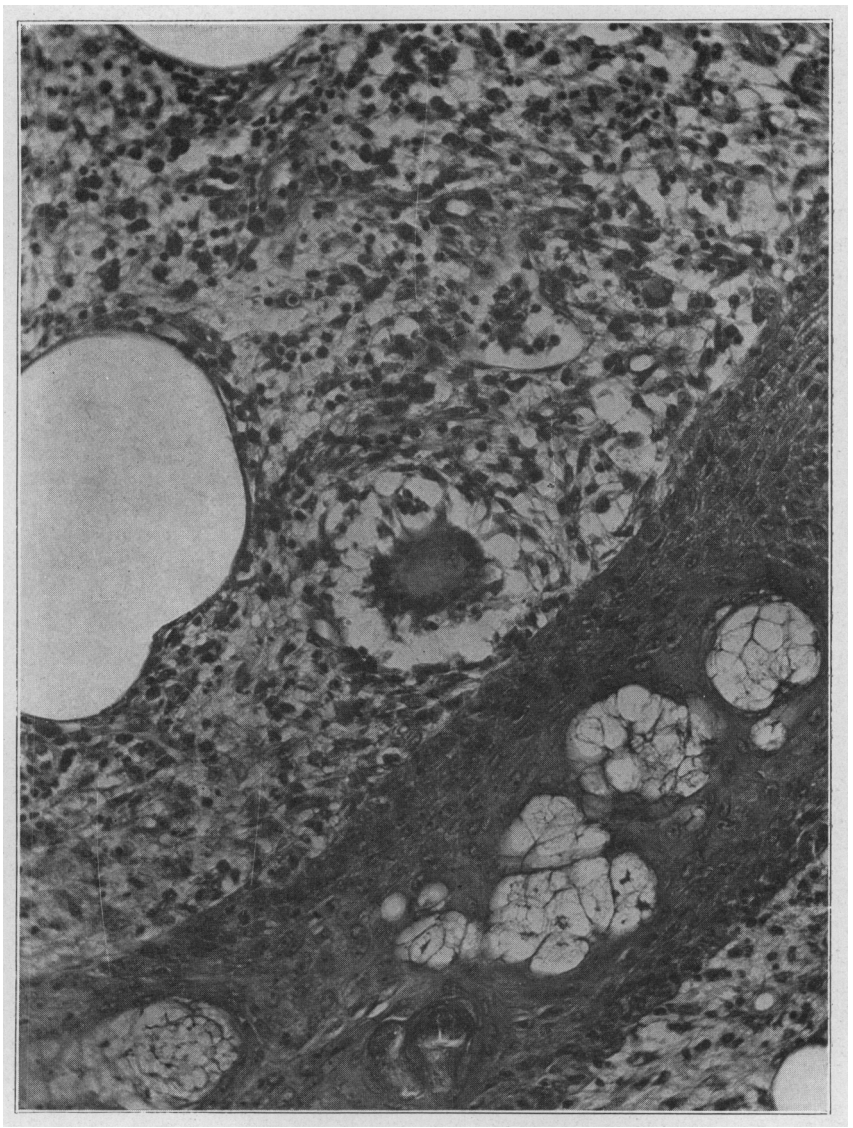

Fig. 8.—High power; an isolated chorioplaque within a lymphatic space, the latter containing a few small round cells; edema and degeneration of the surrounding tissue, together with a few plasma cells and many polymorphonuclear leukocytes.

Perifolliculitis capitis abscedens et suffodiens is probably a rare disease; for among the many cases of folliculitis and perifolliculitis appearing in the literature, Ruete was unable to find an example similar to his case; he also notes that the textbooks do not mention the condition. He is of the opinion that, as long as the etiology of the scarring alopecias is not better established, this affection should be classed as a separate entity.

A well defined example of this peculiar affection of the scalp recently came under our observation. The patient was referred for consultation by Dr. A. Monae-Lesser of New York, and we are indebted to him for permission to publish the following report.

REPORT OF CASE

History.—M. F., an unmarried man, aged 27, applied for advice on June 30, 1920. His family and personal histories were negative. His occupation was bookkeeping. He had always been in excellent health. His scalp affection began nine months prior to the consultation. He noticed the first lesion while he was serving with the A. E. F. in France. It began as a crop of what appeared to be ordinary pustules on the vertical portion of the scalp, accompanied with a little pain and discomfort. The army surgeon prescribed various antiseptic ointments, none of which effected an improvement, and the disease steadily progressed, so that in a short time, nearly the entire vertical portion of the scalp became involved in the process.

Examination.—At the time of examination, the diseased area occupied the entire vertical portion of the scalp, embracing an area roughly circular in shape, with a diameter of about 8 inches, the vertex of the skull forming the approximate center of the affected patch.

It was realized, at a glance, that the picture which confronted us was a most unusual one. Multiple furunculosis and folliculitis, pseudopélade, folliculitis décalvans, alopecia cicatrisata, and other similar diseases with which we are more or less familiar, could be readily ruled out, as the resemblance to these was at best only a remote one. In fact, it was chiefly the localization of the diseased area which brought to mind these different affections of the scalp.

The diseased area presented between forty and fifty more or less elevated hemispheric lesions, varying in size from that of a pea to that of a hazelnut. Some of these resembled ordinary soft, broken-down pustules and furuncles, free of hair, and emitting a seropurulent discharge; others had a more solid aspect, resembling sebaceous cysts. The larger lesions, however, presented a more striking appearance; they consisted of soft, flabby, hemispheric formations, which glistened as though coated with varnish, and which were distinctly opalescent in color; they reminded one of a partly collapsed green grape with its translucent skin. From some of these, a clear serous exudate could be expressed by merely touching the surface. Most of these lesions stood out prominently and separately; but here and there were areas which evidently resulted from the confluence of several individual formations. The surface of all lesions was free of hair, while in the spaces between them the hair remained but could be removed by slight traction. Many of these soft nodular lesions presented small openings, either at the summit or the base, through which a sticky fluid, serous and seropurulent in character would exude, bathing

Fig. 9.—Medium high power; a high grade edema of the connective tissue, and the plasma cell infiltration; polymorphonuclear cells scattered throughout the edematous collagen, and in the lymph spaces.

the surrounding area with a film of adherent exudate. Pressing a probe against one of these lesions would result in a forced extrusion of discharging matter from numerous sinuses situated from 1 to 3 inches away from the point of pressure. A probe could be passed into some of these sinuses, traversing the undermined scalp for distances varying between ½ to 3 inches, toward the vertex of the skull. The introduction of a probe caused a moderate amount of pain. The other portions of the scalp were normal.

The various types of exudate were carefully examined, microscopically and culturally, by Dr. J. G. Hopkins, working in Prof. Zinsser's laboratory. There was no evidence of fungus or yeast infection. Smears revealed a great abundance of *Staphylococcus albus* and *S. aureus,* and streptococcus organisms. Sections and smears stained for tubercle bacilli were negative. The patient's Wassermann reaction was negative. He refused to submit to tuberculin and other tests.

Histopathology.—A section was obtained from a well formed nodular lesion, about the size of a pea. The tissue was stained with hematoxylin eosin, polychrome methylene blue, and Weigert's stain.

The striking feature of the case lies in the histopathologic structure of the excised lesion. This proved to be a pure granuloma and the presence of numerous giant cells pointed to a process suggestive of tuberculosis.

Low Power: The predominant feature consisted of a polymorphous cellular infiltration, occupying chiefly the mid and deep portion of the cutis; dilatation of lymph spaces and lymphatic vessels; edema of the entire tissue; dilatation of the blood vessels and perivascular infiltration throughout the tissue; and disintegration of the lower portion of the corium. Occupying the latter area, the infiltration was diffusely spread out, and the epidermis exhibited pressure atrophy and varying grades of acanthosis. There were many newly formed blood vessels in the upper and midcutis and greatly dilated lymph vessels resembling lymph sinuses.

High Power: Associated with the edema was a granular degeneration of the connective tissue. The infiltration was chiefly perivascular, for the greater part lying in the perivascular lymph spaces.

Cytology: The perivascular infiltration consisted chiefly of plasma cells, with outlying round cells. In the deeper portion, where the tissue was broken down, there were numerous giant cells, varying in shape and size, and in different stages of vacuolization; some of these might be called chorioplaques. Throughout the entire tissue, beside the cells enumerated, there were large collections of lymphocytes and polymorphonuclear leukocytes, without any special relation to vessels and lymphatics. Here and there isolated giant cells were located within lymphatic spaces. Within some of the dilated blood vessels there were many polymorphonuclear leukocytes and lymphocytes. The vessel walls were edematous, but there was no hyperplasia of the elements of the walls.

There was no distinct tubercle formation as is seen in sarcoid and lupus vulgaris; epithelioid and mast cells were not present.

COMMENT

The features of this case which are of interest to the dermatologist may be enumerated as follows: The disease is a rare one, only three examples being reported in the literature. The clinical appearances in these three cases are almost exactly alike. In its active stages, before

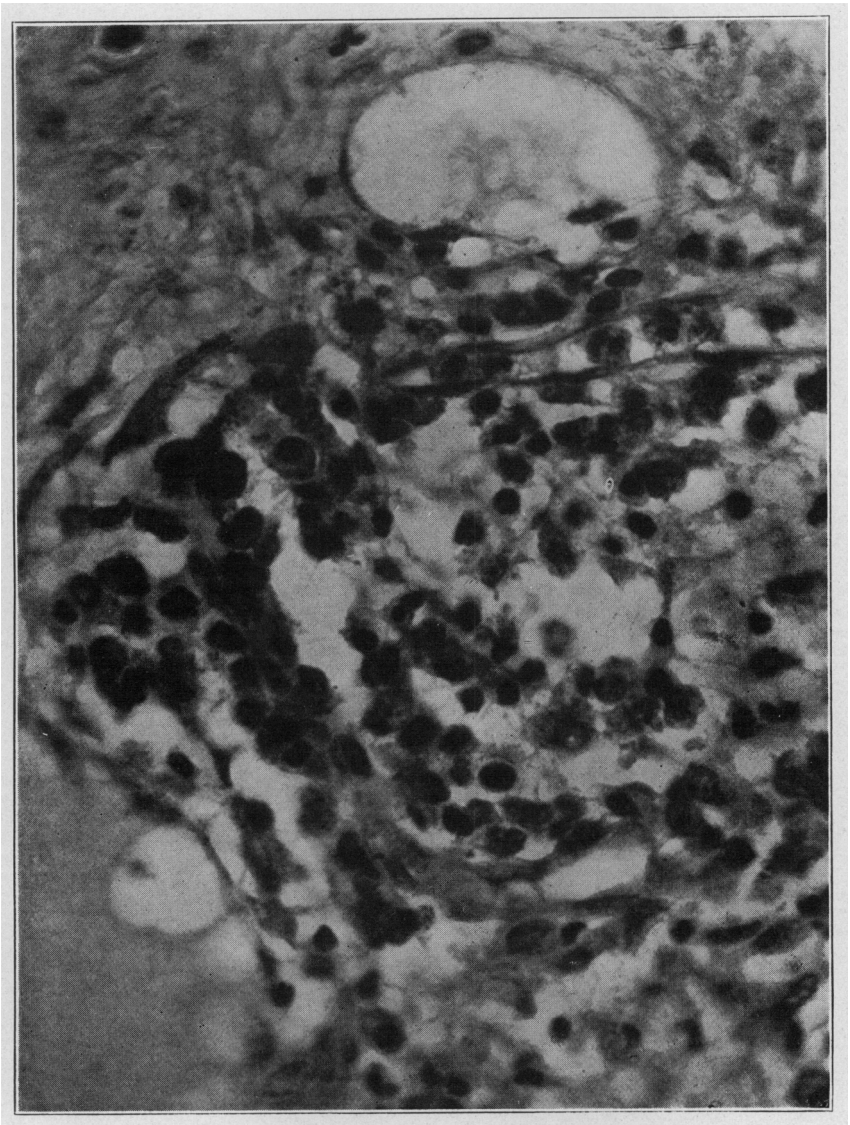

Fig. 10.—High power; the plasma cell perivascular infiltration; disintegration of the connective tissue.

atrophy and scarring have taken place, the disease picture differs markedly from that of any other atrophying and destructive disease of the scalp. In its end stages, after complete involution has occurred, the affected areas resemble those seen in folliculitis décalvans, pseudopélade and other similar conditions.

Assuming that the purulent element in this malady is due to secondary invasion of pus organisms, the causative factors are as obscure as in the destructive affections of the scalp mentioned before. This is of especial interest in view of the histopathologic structure of an active nodule, revealing, as it does, a granuloma, with features resembling a tuberculous process. An almost identical microscopic picture was seen in the case described by Ruete.

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ABSTRACT OF DISCUSSION

DR. WILLIAM ALLEN PUSEY, Chicago: I have been looking for a description of this condition for more years than I am willing to admit. I had such a case when I was a dermatologic boy. I have seen no cases since and have not seen the cases in the literature that Dr. Wise has referred to. I am very much obliged to Dr. Wise for putting it on record in this country. My case was that of a neglected farmer's child, with a complete undermining of the scalp by a purulent infection. I conceived the condition at that time to be, and still consider it, multiple abscesses of the scalp, which coalesce under the thick fascia until the whole scalp is undermined. I should rather call it multiple abscesses of the scalp with destructive cellulitis. I enjoyed Dr. Wise's title, but I did not know what "suffodiens" meant and I would rather see the case put down by us and tabulated as multiple abscesses with destructive cellulitis of the scalp, than under a name that might confuse for a moment, at least, some of us.

DR. J. FRANK WALLIS, Washington, D. C.: In 1905 I reported a number of cases (ten) with clinical pictures corresponding closely to this one. The unusual picture and the ages, the eldest patient being about 20 or 21, did not at first suggest ringworm. Cultures and microscopic findings were negative until on close inspection a small black speck was obtained by pressing the pustules, and this contained a short hair stump with spores typical of the ringworm fungus. The cases were all in girls. For want of a name for this unusual condition I called it small multiple kerion. The clinical picture of the numerous abscesses undermining the scalp suggest the condition Dr. Wise has described.

DR. FRED WISE, New York: Dr. Pusey was right in interpreting the case as one of multiple abscesses, and we considered that when we looked at it, but there were two things against that diagnosis. The lesions were vesicular; they began as serous lesions, looking like a partially collapsed green grape, not like pustules which had ruptured. They began as vesicles, filled with clear serum and afterward became very much like impetigo. Another fact against a diagnosis of furunculosis is that furunculosis of the scalp is fairly common, whereas I think these cases with undermining are rare. Dr. Pusey said that he has seen only the one case, although I am sure he has seen much furunculosis of the scalp. In regard to Dr. Wallis' remarks, we examined the patient for kerion, although we did not expect to see kerion in an adult.