

enough cement substance to hold the individual cells together. The lower parts of the hairs show an increase in nuclei and pigment.

Besides the local treatment, which consists of invigorating baths, as for instance those of salt water, and that special treatment described under the local form of this affection, particular attention is to be directed to the general nutrition, which must be improved.

**Alopecia Simplex.**—Pincus has described instances in which there is a general loss of hair of the scalp; the crop of hair becomes thinner and thinner, just as it does in alopecia pityrodes, but there is no pityriasis in connection with the loss of hair. This latter fact made it seem proper to give this special form of the disease a separate name. The treatment is similar to that in alopecia pityrodes, only the shampooing to remove dandruff may be omitted as unnecessary.

(c) **Alopecia Areata.**—(Synonyms: Area celsi, area circumscripta, area accidentalis, tinea decalvans, teigne pelade, pelade.)

The term "alopecia areata," as it is used to-day, is rather vague and ill defined. Several diseases are probably included under it.

The affection is a disease of the hairy parts of the body, producing a loss of hair in circumscribed areas, which commence as small spots and gradually increase at the periphery, the underlying skin being apparently little or not at all affected. The regions most frequently attacked are the scalp, the beard, and the eyebrows. The disease may occur on any part of the body where hair is found. The loss of hair may be partial or complete. The mild cases are usually limited to the head, beard, and eyebrows.

Crocker, in order to substantiate his belief in a connection between alopecia areata and ringworm, has pointed out that it is more frequent in those countries where the latter prevails (France and England), while both affections are far less frequent in Germany and America. Men are more often attacked than women, persons between the ages of ten and twenty-one more frequently than others; dark-haired persons suffer more from the affection than blondes.

Constitutional or local prodromal symptoms are absent as a rule; there may be some malaise, loss of appetite, headache, slight itching, and other parasthesiae. H. Schultze (Virchow's *Archiv*, vol. lxxx., 1880), who observed the disease on himself, made note in his case of a unilateral headache upon that side, which, later on, became invaded by alopecia areata.

The parts of the scalp most generally affected are those surrounding the junction of the occiput and the parietal bones. There is no symmetry in the lesions as a rule. The formation of the individual patches is about as follows: A patient may notice that in a certain spot his hair comes out very freely. He observes a bald space. He attempts to pull out some hairs, and finds

that they can be removed very easily and wholly without pain. Afterward the hairs may fall out spontaneously along the periphery of the small patch first seen. The patch grows larger, rapidly or slowly, and in all directions. The increase in size may progress more rapidly in one direction than in another, thus creating oval or irregular patches. There may be only one patch, or there may be several, beginning at the same time, or, as is usually the case, there may be successive crops of bald spots.

The areas of baldness are from one-half to two inches in size, but by the coalescence of several areas very large patches are sometimes formed. Individual areas are not always very sharply defined from the surrounding healthy structures, in the first stages of the malady.



FIG. 89.—Alopecia Areata. (From a photograph of one of author's cases.)

The periphery is surrounded by a thinner crop of hair. There may be some few healthy hairs left even in the centres of the bald areas, hairs which cling to their papillae. Some broken-off hairs, projecting from their follicles, are often noticed upon close inspection. The skin at the seat of the affection is smooth, shiny, thin, and can readily be lifted up between the fingers. It looks paler than the normal skin, and on being pricked with a needle blood oozes less readily. There are no vesicles, crusts, or scales, no efflorescences of any kind. In some few cases I have observed a slight scaling, redness, and some oedema at the beginning of the disease. The level of the affected skin is felt to be below that of the neighboring normal skin. This is due to the fact that the skin has sunken in, on account of the absence of so many hairs in the now collapsed hair follicles, and not, as some believe, to an atrophy of the cutis. The nervous impressions are not impaired. The tactile, temperature, and

pressure senses may be slightly increased (Michelson). Neumann, however, has observed anaesthesia. When the disease, at a given patch, has come to a standstill, the hairs at the periphery become more normal in number, and cannot be as easily plucked out as before; the affected area is now sharply defined. The period of baldness of such a patch is, as a rule, of several weeks' duration, and if, at the expiration of this time, there are no signs of regeneration, it is difficult to determine when the hairs will make their reappearance. The malady may go on for years and years. Recovery has been observed after a period of from ten to fourteen years, and even after a much longer time; it may, however, never take place.

Reproduction of healthy hair begins almost always at the periphery and progresses from without inward. First, small lanugo hairs begin to appear. These, after a short struggle for existence, may fall out again, to be replaced by stronger and longer hairs. This replacement of the new hairs by others may repeat itself several times before the normal hairs finally make their appearance, and these latter may even then lack color for a long time.

The affected area may long after be recognized as the site of a previous alopecia areata.

Alopecia areata of the other hairy regions presents analogous phenomena. The beard, eyebrows, axillary and pubic hairs may fall out. All the hairs of the body may disappear, thus constituting the alopecia maligna of Michelson.

**Pathology.**—Nothing characteristic of this affection can be obtained from an examination of the hairs. They show the same simple atrophy as seen in the hairs shed in the physiological way. In some the roots are not bulb-shaped, but pointed, a fact to which we have already called attention, in connection with the pathology of alopecia pityrodes.

I have given my observations of the microscopical changes of the skin before the Ninth International Medical Congress at Washington (1887). Many pieces of skin were taken from seven different patients. In spite of the clinical appearance of the disease, the presence of an inflammatory process in every case could be observed. S. Giovannini (*Ann. de dermat. et de syph.*, 1891) and Sabouraud (*ibid.*, 1896) have also found perivascular small round-cell infiltration, consisting of "Mastzellen" and mononuclear leucocytes. This, according to Sabouraud, goes to show the presence of an agent with decided chemotactic influences upon these cells, an agent probably emanating from a micro-organism. In my sections, the subcutaneous tissue was normal, the lymphatics were somewhat dilated and contained micrococci. Whether they have any etiological relationship to the pathological phenomena, I have so far been unable to demonstrate.

Some hair follicles showed replacement of the normal hair by lanugo. The hairs in some were broken, or stubbed and split. The lower parts of the follicles were devoid of pigment, this explaining the loss of color of the returning hairs during convalescence. In cases of permanent alopecia of long standing, hair follicles and sebaceous glands had been destroyed. The blood-vessels showed a thickening of their walls.

**Etiology.**—There is in dermatology hardly a single disease whose nature is so much disputed as that of alopecia areata. Three views are held in regard to it: first, that it is a trophoneurosis; second, that it is of parasitic origin; third, that what we understand under alopecia areata to-day is not a clinical entity at all, but that under this name are grouped several diseases, some of which are neurotic, while others are parasitic. Truth, I believe, rests with those who uphold the last-named theory.

In my opinion, every case of alopecia that commences as a small spot and gradually increases in area by extension at the periphery and shows the clinical characters I have described, is due to the local action of an organism.

In support of the first view are cited the nervous prodromal symptoms, such as neuralgia, headache, and the various parasthesiae, and the fact that loss of hair in patches often follows nerve injuries. Kaposi enumerates many instances of this kind. Best known are the experiments of Joseph and Mibelli, who observed alopecia following the excision of the second cervical ganglion. Moskalenko and Ter-Gregoryanitz (*Vrach.*, 1899) have produced typical alopecia areata in dogs, cats, and rabbits by performing the same operation, and also by cutting the nerve roots. Injury to the peripheral nerves produced no typical alopecia areata, as the patches that showed themselves were not round. If the disease were always due to nerve injuries, the triangular form, corresponding to the area of supply of a given nerve, should be more frequent. Besides, there are undoubted cases in which the lesions spread without regard to blood-vessel or nerve supply.

According to my view of the subject, the cases of circumscribed loss of hair following nerve injuries are not instances of alopecia areata, if we understand this term to mean an affection in which the hair falls out in round patches, which spread at the periphery; this being always the true progress of a parasitic disease.

The fact that regeneration progresses from without inward has been brought forward as an argument against the theory; if justly so, remains to be seen. Another argument against it is the absence of all inflammatory symptoms usually seen upon the surface—i.e., vesicles, scales, crusts, etc.; but as already mentioned, an inflammatory process is always present.

Numerous organisms have been found. As early as 1843, Gruby had described his "Microsporon Audouini," but it was found that it represented one of the forms of the ringworm fungus. Others who called attention to parasites are Malassez (1875), Thin (1881, bacterium decalvans), von Sehlen (1884, areacoccus), myself (1887), and Vaillard, Vincent, Nimier (1889), etc. In 1896 Sabouraud (*Ann. dermat. et syph.*, 1896, i.) brought to notice an organism which he named "microbacillus alopecie areata," and, not being certain as to its etiological importance, "le microbaccille de l'utricule peladique." He admits that it may be identical with Unna's and Hodam's organism found in comedones, and in acne. In the following year (1897, *Annales de l'Institut Pasteur*) he stated that in his opinion comedones, acne, seborrhoea, alopecia pityrodes, and alopecia areata are all caused by the same organism, varying only in intensity and location.

In support of the parasitic theory, frequent reference is made to the instances of contagion as cited by Crocker, many French authorities, and by Bowen and Putnam of this country (*Journ. of Cut. and Genito-Urinary Diseases*, 1897,) and again by Bowen in 1899, in the same journal. In France the disease has been observed especially in the army, and is believed to have been due to having used the same hair-clipping machines, or to having worn the same caps and helmets. Sabouraud (*loc. cit.*) has observed that many cases applying for treatment at the Hôpital St. Louis came from the same section of the town, and that some had employed the same hairdresser. The epidemic in an asylum, described by Putnam, is remarkable. Sixty-three out of sixty-nine girls were infected, and there was no trace of ringworm. A girl, who was believed to have spread the disease, left the institution, and went home, where in a short time her stepfather became infected. In the mean time the epidemic at the asylum had come to a standstill. A few years after, this same girl was again received at the institution, and in a very short time twenty-six out of forty-five children showed evidences of the disease. Hutchinson and Crocker think that there is some relationship between ringworm and alopecia areata.

**Diagnosis.**—A typical case can be readily recognized by the lesions being round and spreading at the periphery. The thin, smooth, shiny skin, sunken beneath the niveau of the surrounding healthy skin, and showing no signs of an inflammatory process, makes the diagnosis easy. Alopecia areata has to be differentiated from ringworm, favus, sycosis, syphilis, folliculitis decalvans, and the loss of hair after traumatism. Alopecia maligna must be distinguished from alopecia pityrodes universalis (*vide* above).

In ringworm we find dermatitis, broken-off hairs, and the ringworm fungus under the microscope; in favus, also, the organism producing it, as well as the yellow cups, scar tissue, and a grayish discoloration of the atrophied hairs. Folliculitis decalvans presents evidences of follicular inflammation and scar-tissue formation. Alopecia syphilitica shows irregular patches, not depressed, especially affecting the outer portions of the scalp and the eyebrows; besides these, there are concomitant symptoms of the disease.

Cases of the falling out of hair in patches, in consequence of nerve injuries, have been observed, and the characteristics of the resulting bald spots were similar to those of the ordinary cases of alopecia areata. The clinical history of the manner of formation of the patch is, however, different. I consider those cases only to be true examples of alopecia areata in which the patches grow by extension at the periphery.

**Prognosis.**—As alopecia areata tends to a spontaneous recovery in the majority of cases the prognosis is favor-

able. Even if regeneration does not show itself for years, hope should not be entirely abandoned, for regeneration may ultimately take place. This was true in several instances, where new hairs grew even after a decade or more from the beginning of the malady. It is my experience, however, that if a patch remains quite free from lanugo hairs for several months, it shows that the follicles are probably destroyed and that there will be a permanent alopecia. The older the patient, and the longer the area has been affected, the graver becomes the outlook as to recovery. The possibility of relapses must not be forgotten.

**Treatment.**—On account of the fact that recovery is often spontaneous, it is exceedingly difficult to appreciate the value of any therapeutic agent otherwise than by means of a long series of observations. A host of remedies has been recommended. Internally, arsenic, cod-liver oil, tonics, and jaborandi should be tried in connection with dieting, physical and mental hygiene. While such a therapy may not have any direct effect upon the cause of the lesions, it may help to render the system more resistant to the disease. Tinctura jaborandi is administered to produce a local hyperemia of the pale patches whose blood-vessels are abnormally contracted.

The older methods of local treatment were addressed to stimulate the nutritive processes of the part; to-day, when the parasitic theory prevails, parasiticides are used. Chrysarobin, in my opinion, stands out far above any other remedy. It is most effectual when incorporated in vaselin or lanolin; much more so than when combined with liquor gutta percha or traumaticin. As a rule, a six to ten per-cent. preparation is applied daily for one or two weeks, and then stopped for a short time to observe if the disease has stopped. If lanugo hairs do not appear soon, or if the hairs at the periphery continue to fall out or can be easily pulled out, the treatment is continued. Care should be taken that the application does not reach the eyes, as a severe conjunctivitis might follow. Because of this possible danger it cannot be used upon the eyebrows. Jessner (*Monatshfte f. prakt. Derm.*, 1900) recommends for these that carbolic acid be applied bi-weekly. The slight mahogany discoloration observed around the neck and in the face, after the use of chrysarobin, is the first danger signal of an approaching dermatitis. The remedy should now either be stopped at once, or the strength of the ointment be reduced. The hairs around the periphery should be removed as soon as they become loose. Croton oil, which is a pure irritant, may be of benefit in chronic cases. It should be used with olive oil, equal parts, and applied every day until a dermatitis is produced.

Balzer and Storianowitch (*Journ. des praticiens*, 1899; *Monatsschrift f. prakt. Derm.*, 1900) have obtained good results with a fifty-per-cent. solution of lactic acid in water or alcohol. The affected parts are first freed from oil with alcohol and ether, and the remedy is then applied with a swab of cotton until slight redness appears. Besides this the scalp is washed with a one-per-cent. bichloride solution. After the stimulation has become well marked, the applications of lactic acid are interrupted for a few days. Boric acid vaseline is spread upon the surface in the intervals. The alcoholic solution is said to be the less painful.

Recovery was obtained fifteen times out of nineteen cases, in from two to three and a half months. Lanugo hairs made their appearance at the end of the second week, at the earliest. McGowan (*Journ. of Cut. and Genito-Urinary Diseases*, 1899) recommends trikresol used pure upon the scalp, and upon the face in a fifty-per-cent. solution. He was led to use this remedy from his experience with pure carbolic acid.

Scarification, with subsequent application of a solution of corrosive sublimate 1:2,000, as in erysipelas, seems to be a rational mode of treatment, but still there is some danger here of infection with pus organisms. Injections of bichloride 1:40, made at different points, are recommended by Moty, of Paris.

Lately, Finsen, of Copenhagen, who obtained such brilliant results, especially in lupus vulgaris, with the application of concentrated violet light rays, has been successful in treating alopecia areata by the same method (*British Medical Journal*, 1899). Jesild (*Annales de derm. et de syph.*, 1899), who has followed Finsen in his treatment, states that it cures alopecia areata in two months, instead of the three to six months necessary by the use of older methods.

Brisquet uses oil of cinnamon (Chinese) and sulphurous ether 1:3. He avoids washing the scalp to exclude humidity (after the hairs have ceased to fall). The sulphur preparations are often of prompt and decided value; e.g., an ointment of one to two drachms of precipitated sulphur to an ounce of vaseline, rubbed well into the scalp daily, after a thorough washing of the whole scalp with soap and water.

In my opinion, as already stated, cures can be obtained more quickly, and with greater certainty, from the use of chrysarobin than by any other method. After the hairs have ceased to fall out, some stimulating and anti-parasitic application should be applied for a few months.

(d) **Folliculitis Decalvans.**—Within the last decade French authors especially have called attention to the hair follicles being attacked by some affection whose nature still remains obscure. Each authority in turn has considered the individual disease before him as a new one, and has stamped it with a new name, so that in wading through their literature, we meet with a formidable array of names, "the sum of which has brought despair to every humble reader" (*vide* my article in Morrow's "System of Genito-Urinary Diseases, Syphilis and Dermatology, 1894). Some of these affections are identical, some represent only novel aspects of well-known diseases.

The following are a few of the titles given: "Folliculites et perifolliculites agminées destructives du follicle pileux" (Brocq); "folliculite épilante" (Quinquaud); "folliculites et perifolliculites décalvantes agminées" (Brocq); "alopécie cicatricielle innominée" (Besnier); "acné décalvante" (Besnier, Lailler, Robert); "lupoid sycosis" (Milton, Brocq); "ulerythma sycosiforme" (Unna).

A description of a few of these types may suffice. (a) "Pseudo-Pelade," *Simple Folliculitis Decalvans.*—This affection somewhat resembles alopecia areata, but on close inspection a mild folliculitis and perifolliculitis may be noticed. There are rose-colored, inflammatory tumefactions, soft to the touch; the hairs fall out, and are easily plucked out; they are not broken; there is a marked atrophy in the older spots; these are depressed, shiny, and, unlike those of alopecia areata, hard and irregular, and, as a rule, smaller. The disease spreads in an irregular manner.

(b) "Folliculite Epilante" of Quinquaud.—This form corresponds to the acné décalvante of Lailler and Robert. It resembles the former with the addition of supuration in the follicles. Besides the scalp, the beard, axillæ, and pubic regions may be involved. Permanent alopecia appears also, caused by the cicatricial destruction of the hair-producing areas. The bald spots are round or irregular; along their periphery or in islands of healthy hair within them, small pustules, perforated with a hair, are usually to be seen. Quinquaud found micrococci, but was unable to establish their causative effect.

(c) "Alopécie cicatricielle innominée" of Besnier is almost identical with Quinquaud's disease. It is slightly more superficial, more chronic, and more obstinate; the cicatricial changes are greater; the margins are not sharply defined; the disease spreads by continuity. Besnier himself considered both diseases the same, but Quinquaud stated that they are not identical.

(e) "Dermatitis Papillaris Capillitii."—Under this name Kaposi has described a follicular disease appearing at the junction of the nape of the neck and the scalp, invading the latter often as far as the vertex. It is doubtful whether this affection is a clinical entity, or simply a variety of some other disease. According to

Kaposi it commences in the form of an isolated papule of the size of a pin's head. These papules later on aggregate to form elevated red plaques, which are quite hard and from which the hairs project in brush-like bunches. The hairs are not readily removed; they break and are atrophied; pustules may be noted in places. After the disease has invaded the scalp and lasted a long time, papillomatous vegetations are formed, 2 to 3 cm. in diameter, covered with crusts from which oozes a foul-smelling secretion. Abscesses may develop also.

Microscopical examination shows an extremely vascular papillary outgrowth, very much resembling granulation tissue. The disease finally progresses to the formation of connective tissue and scar tissue, with the subsequent death of the invaded hair follicles. Nothing is known positively as to its etiology. It occurs at all ages and in both sexes.

**Diagnosis.**—The disease would have to be differentiated from a papular syphilide. Coccogenic sycosis and eczema do not show such a firm induration, and their clinical history is different.

**Prognosis.**—The disease has no tendency to spontaneous recovery, but it is usually slow in its progress. The general health remains unaffected. The lesions may return after excision of the affected area.

**Treatment.**—Mechanical removal of the growth is the only means of treatment so far as we know. Curetting, excision, and cauterization with chemical, electric, or actual cautery must destroy the base of the disease or there will be recurrences.

## II. Alopeciæ Symptomaticæ Sive Secundariæ.

1. **ALOPECIA TOXICA.**—In the course of some infectious diseases there are noticed grave disturbances of nutrition from the toxins in the system, disturbances which also affect the growth of hair. It seems as if the toxins themselves can produce baldness, when it occurs during the attack of the infectious disease, as in alopecia syphilitica. The loss of hair may be subsequent to the general grave nutrition disturbances, as when it appears during convalescence after typhoid fever. This form of alopecia is also seen in the cachexia that occur with malignant disease, chlorosis, etc. Some drugs may produce it, as mercury and acetate of thallium. S. Giovannini (Turino) (*Derm. Zeitschrift*, 1899), and others, have observed general loss of hair following the administration of doses of 0.1 of this latter remedy given for the suppression of tuberculous night sweats.

*Alopecia syphilitica* is perhaps of sufficient interest to warrant a short description, on account of its comparative frequency, its often very typical course, and the importance of making a correct differential diagnosis. We refer here only to that variety that is noticed at the beginning of the secondary period. It may be complete, all the hairs of the scalp, the pubic region, and the axillæ disappearing, or the hair may fall out in larger or smaller patches which are usually symmetrical. It is highly characteristic of this affection that it invades especially the outer border of the scalp, the temporal, parietal, and occipital regions, and, unlike alopecia pityrodes, avoids the top and front of the head. What is stated by Fournier to be almost typical of syphilitic alopecia is the falling out of the outer halves of the eyebrows on both sides. Any concomitant syphilitic lesions will aid in distinguishing it from alopecia areata, which it often resembles.

Its prognosis is good, even the complete alopecia yielding to proper antisiphilitic treatment. Alopecia pityrodes, however, often follows in its wake. It is obvious that attention must be paid to this according to the rules prescribed for this disease. The prognosis in all the alopecias due to toxins is very favorable. *Cessante causa, cessat effectus.* The underlying cause should therefore be removed, if possible.

2. **ALOPECIA DYNAMICA SIVE DESTRUCTIVA.**—Loss of hair may be caused by toxins in connection with local destructive processes. It is then purely mechanical, due to the loss of tissue or to pressure atrophy. This may occur in severe or deep local inflammations, as in long-

continued sycosis, aggravated forms of acute eczema, erysipelas, impetigo contagiosa, or in inflammations accompanied by ulceration spreading over the surface, as in pustular, tubercular, and gummatous syphilides, lupus vulgaris, lepra, the kerion of tinea trichophytina, and ulcerating neoplasms, most frequently epithelioma. Finally, the hair follicles may be choked to death, so to speak, by some chronic inflammatory processes which do not suppurate, but have a tendency to scar-tissue formation, causing atrophy, due to the mechanical cutting off of the blood supply. Lupus erythematosus, scleroderma, lichen planus, and the keratosis follicularis of Brocq belong in this class.

The prognosis depends upon the severity of the local primary disease. In most of them the resulting alopecia is permanent. The treatment is that of the underlying affection.

3. **ALOPECIA NEUROTICA.**—Traumatism to an individual nerve, or to the central nervous system, as a fractured skull, concussion of the brain, shock, or their combinations, may cause loss of hair—a loss which may be complete, as in the three cases cited by Michelson, one of which showed not even a single lanugo hair after a fall, followed by a period of unconsciousness lasting for a year. It may be unilateral, or partially limited to the area of distribution of a single nerve; in the latter case the resulting bald spot is, as a rule, triangular.

Fisher observed complete alopecia of the extremities following gunshot wounds. These cases were remarkable from the fact that they were preceded by a decided increase in hair growth.

The so-called functional psychoses and neuroses, such as melancholia, migraine of long standing, hemiatrophy of the face, produce discoloration and falling out of the hair. Persistent neuralgias do the same, but here the alopecia is never complete. There always remain lanugo hairs in the affected area. Some cases that are looked upon as examples of alopecia areata undoubtedly belong in this category.

A. R. Robinson.

**ALPENA MAGNETIC SULPHUR SPRINGS.**—Alpena County, Michigan.

**Post-Office.**—Alpena. Hotels. This celebrated spring or well is situated in the city of Alpena, on Lake Huron. It is reached by vessels on the Great Lakes and by numerous lines of railway. The vein of water supplying the well was discovered in 1869 by prospectors boring for salt. The present well was not fully developed, however, until 1891. At a depth of 105.2 feet the drill struck a stratum of lodestone which so profoundly charged the drill with positive magnetism that great difficulty was experienced in removing it from the iron casing. It is said that a piece of steel will at once become magnetized if held in the flowing water of the well. A sumptuous bathing establishment has been erected, which in point of elegance, comfort, and equipment is not easily surpassed. The building is delightfully located on Thunder Bay, at an elevation of 585 feet above the ocean level. It is abundantly supplied with facilities for Turkish, Russian, vapor, and electric baths. The surface of the country about Alpena is undulating, and the soil of a sandy loam, such as is found in pine regions. Dr. A. M. Miller, of Alpena, informs us that the winter temperature ranges from 58° to 27° F., and the summer from 98° to 34° F. The average for the year is 41° F. The temperature of the water ranges from 40° F. in April to 67.6° F. in August, falling again to 36.1° F. in November. The following analysis was made in 1892 by Professor Edwards, of the University of Michigan:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Sodium carbonate	1.67
Sodium chloride	243.89
Magnesium chloride	78.22
Sodium sulphide	28.05
Calcium sulphide	182.56
Total	534.39
Sulphureted hydrogen gas, 7.38 cubic inches.	