

them, to be tried if desired. Hebra advises a plaster spread on linen, such as empl. saponatum, diabolani, de Meliloto, to be the size of the diseased surface to be covered, the whole strewn with pulvis opii and fastened by means of a cloth or roller bandage, and the dressing changed once or twice within two or three days, until amelioration or cure results; besides, narcotics internally.

Wilson recommends large doses of quinine and iron, here and there even arsenic (although some physicians, like Hutchinson and others, have seen outbreaks of zoster appear in consequence of its use), also potassium iodide and narcotics. Among local applications have been recommended frictions with:

Oleum cadini, chloroformillæ, tr. aconiti, ãã partes æquales; or, Tr. opii et Tr. aconiti, ãã partes æquales; furthermore, ferri sesquichlor., 5 grams; alcohol. rectific., 30 grams; hydrarg. bichlor. corros., .05 grams; collodii, 5 grams; also frictions with ol. cajuputi, chloroform, etc.

Every physician who has some experience with cases of zoster will have been forced to make numerous trials, so as not to tire the patient, should some remedies give only temporary relief. All these measures cannot in the least take the place of the sedative method at our disposal in the form of narcotics. In intense neuralgias, morphine should be given in powder or hypodermically, also chloral hydrate, especially at night, so as to ward off the sleeplessness often caused by the neuralgia, at the same time bearing in mind the local treatment by cold applications, Hebra's plaster with opium, etc.

As auxiliaries it is well to recommend now and then baths and cold frictions, especially in cases in which narcotics cannot be borne for any length of time. Sequels in the shape of sensory and motor disturbances require electricity which often consumes much time and patience.

#### MALUM PERFORANS PEDIS.

This is a disease caused by the influence of the trophic nerves; it begins as a cutaneous affection and leads to deeper lesions. This disease implies an ulcerative affection of the sole of the foot, beginning with a proliferation of the epithelium which sometimes springs from a thickening of the epidermis resembling a corn, sometimes from a corn subjected to constant pressure, at times from some other, usually traumatic influence.

In all cases the affection begins as a roundish ulceration as if punched out with an instrument; it is the consequence of a chronic inflammation which, if recognized in time and properly attended to, may close again; if not, it forms a disease which progressively extends in depth, with subsequent destruction of all the soft parts, the joints and bones; it often resists the most careful treatment, and in its further spread it not only becomes deeper, but also wider. The accompanying alterations on the common integument are very characteristic of the trophic disease. The alterations manifest themselves by excessive formation of epidermis, change of the nails, and profuse development of hair, both on the dorsal side of the foot and on the whole lower extremity. Together with these conditions we often find obvious pigmentations, erythemata and eczemas, and either diminished or increased perspiration. Owing to the local influences which seem to cause malum perforans, the affection was originally believed to be a local one; but the gravity of the disease, the duration of the ulceration, and the destruction of the soft parts and bones soon made it obvious that we must assume a more deep-seated malady, for the perforating ulcer of the foot has been often seen to arise after injuries to the spine, frequently in consequence of peripheral nervous affections; after section of the sciatic nerve in animals, ulcers have been noticed to form on the soles of the feet. Congelation

also furnishes an occasional cause of the disease, and Duplay<sup>1</sup> reports a case in which this cause incited a bilateral outbreak of the disease together with locomotor ataxia. The nervous disturbances preceding the ulceration are as characteristic of this affection as are the sequels. The former include frequent darting and boring pains, rheumatic affections, motor disturbances, etc.; subsequently may be developed general sequels caused by the disease of the nerves, such as local muscular atrophy, general progressive muscular atrophy and tabes.

Therefore, in these cases the character of the trophic disturbances is manifested by a series of symptoms which it would be hard to ascribe to other than nervous causes, especially where a more or less extensive anæsthesia is found in the neighborhood of the ulcer or in the affected extremity. The anæsthesia is a constant symptom of malum perforans, not merely in the region of the ulcer, but in the entire part supplied by the diseased nerve twigs; in some cases it is of so high a degree that the patients suffer from total loss of sensation, and at times the affected leg can be amputated without its being felt.

Histological examination of some nerve twigs showed also that they undergo considerable change in structure; besides the destruction of the myelin and the axis cylinder, a thickening of the neurilemma was sometimes found.<sup>2</sup> Hence the disease in its entire development and course is not only a nervous, but a trophic one, and is discussed in the description of the dermatoses merely in so far as the cutaneous affection represents the initial stage of the perforating ulcer.

#### DECUBITUS ACUTUS.

Ulcerations on the common integument are often observed as concomitants of grave diseases of the nervous system. They always occur after preceding erythemata, which, after a brief existence, are often followed by the formation of vesicles, from which is developed the subsequent destruction of the cutis and the subcutaneous tissue. As such complications usually occur on the lower portions of the horizontally extended body (shoulder, lumbar region, heel), and as they are generally observed in patients who are unable to make active motions, and as the skin, besides, is irritated at times by urine and fecal matters, it is easily understood that the ulcerations occurring in the sacral or anal region were considered processes due to pressure (bed-sores). Samuel,<sup>3</sup> however, has called attention to those ulcerations occurring with diseases of the brain and spinal cord, even after they have lasted but a short time or appearing suddenly in the course of the affection. He distinguished an acute and a chronic form, but his observations relative to the acute form became more generally known and accepted only through Charcot's thorough delineation.

*Decubitus acutus* is the essential form of the trophic disturbance. This affection may be observed in disease both of the brain and the spinal cord, and is a significant malady, for here it is not so easy as in the more gradually developing chronic bed-sores to bring the influence of local irritants to bear upon portions of the back and buttocks. This cutaneous gangrene is seen most frequently with cerebral apoplexy, whether due to external traumatic causes or associated with softening or hemorrhages. Charcot<sup>4</sup>

<sup>1</sup> Archiv génér. de Médecine, 1876, p. 346.

<sup>2</sup> Michaud, Lyon. médical, 1876, Janvier.

<sup>3</sup> "Die trophischen Nerven." Leipzig, 1868.

<sup>4</sup> "Leçons des maladies du système nerveux, etc." Paris, 1881, i., pp. 83 et seq.

first pointed out that, in hemiplegic conditions, the gangrene of the skin and the subsequent ulceration always occur on that side of the nates where the paralysis exists; therefore, in central apoplexies, on the side opposite to the apoplectic patch. Besides, in the latter, there is merely a unilateral ulceration; in apoplexy of the medulla, usually an ulceration extending over both sacral regions. The rapidity with which the ulceration occurs is most apt to make us suspect its neuropathic nature, for it is impossible to explain in any other way such suddenly developing, deep disturbances. In apoplexy of the medulla, the ulcer usually begins in the middle of the sacral region, and thence spreads symmetrically toward both sides; but both in this form and in circumscribed cerebral affections there is anæsthesia of the skin on the portions subject to crusting and ulceration. In patients suffering from this disease, even if the greatest care and attention be devoted to keep the paralyzed part as clean as possible and reduce the pressure to a minimum, the occurrence of bed-sores cannot be prevented.

Post-mortem examinations have in numerous cases demonstrated an inflammatory condition in the central nervous apparatus, but the point of localization could not be determined. Joffroy<sup>1</sup> concluded, from three cases in which the cutaneous gangrene existed on the nates and lesions were present in the posterior lobe and the optic thalamus, that disease of these portions of the brain is to be looked upon as the cause of trophic disturbances; others, however, found hemorrhages in the corpus striatum, anterior lobe, lateral convolution, etc., and have held that these were the cause of the bed-sores. Brown-Séguard concluded from the fact that acute bed-sore is often associated with incontinence of urine that the spinal cord was the starting-point of the affection, while Samuel had previously asserted that it was due to disease of the spinal ganglia. In view of these observations, it seems to be most correct to consider acute bed-sore a disease of the posterior columns of the cord, for in affections of the anterior columns, *e. g.*, progressive muscular atrophy and the essential paralysis of children, bed-sores never occur.

TROPHONEUROTIC DERMATITIS occurs as a disease of the skin in which an erythema first appears on a circumscribed spot and leads to further inflammation, during which manifold nutritive disturbances set in. Among the latter are efflorescences of all kinds occurring after injuries, neuralgias, etc., and developing on an inflamed cutaneous surface. A peculiar form of this disturbance is GLOSSY SKIN. In this affection the skin originally appears red, smooth, and glossy, and shows either a uniform or marbled erythema. Some physicians described the surface of the skin as being like varnish and so tense that all unevennesses and folds disappear. Later, the skin becomes thinner from atrophy of the underlying cellular tissue, and this process extends down to the muscular layers. As this disease chiefly attacks the extremities, the nails usually drop off after some time and the cutaneous glands perish.

This affection was first observed by Alexander Dänmark.<sup>2</sup> Subsequently, Paget,<sup>3</sup> Weir Mitchell,<sup>4</sup> and others have furnished a detailed description and have especially emphasized its complication with violent neuralgias which they termed causalgia (burning pains). It may be assumed that this affection is caused by a peculiar species of neuralgia. Moorhouse, Keen, and Mitchell have more thoroughly established the neuralgic theory; their conclusion is, that, in proportion to the nervous affection of an extremity, this peculiar atrophy of the skin associated with erythema becomes more intense and ex-

<sup>1</sup> Archives de Médecine, 1876, Janvier.

<sup>2</sup> Medical and Chirurgical Transactions, London, 1873, iv., p. 48.

<sup>3</sup> Medical Times, March 26th, 1864.

<sup>4</sup> "Des Lésions des Nerfs," Traduit de l'anglais par Dastre, p. 174.

tensive. Thus Mitchell asserts that, for instance, in injury of the ulnar nerve alone, the cutaneous affection extends only peripherally into the region of the skin supplied by this nerve; but if the lesion involves a larger plexus, not only the entire palm, but also the palmar surface of the fingers is attacked by the atrophic process, while the dorsal surface may remain intact.

At times glossy skin appears in the form of an erythema nodosum, the diseased and painful spots projecting above the surroundings in the shape of single nodes; in other cases the affection begins as a frost bite. Now and then there occur on the surface of glossy skin small excoeriations or ruptures, the underlying skin pressing the tense epidermal layers apart. These additional complications increase the previously existing painfulness, unless a remission and final improvement of the affection have been secured by sedative treatment (electricity, cold water).

#### IV. MOTOR DISTURBANCES.

Motor disturbances cause neither important diseases of the skin, nor serious nutritive changes. In the large number of elastic fibres terminating in its tissue, and in the numerous muscular trabeculæ embedded as smooth muscles both in the blood and lymph vessels, surrounding them as well as the efferent glandular ducts, the skin possesses many elements ministering to its contractility and elasticity. The contractility is caused by the nervous irritation acting on the muscular elements, and is either direct or reflex. Whenever an irritation affecting the cutaneous muscles acts in such a manner that the cutis is strongly excited, the muscular elements contract, the hair-follicles rise, the hairs become stiffer, approach each other, the surface acquires a wrinkled appearance, and a condition results which is called goose-flesh, cutis anserina. The most frequent cause of this alteration is cold, as during bathing in cold water or when the body at normal temperature is disrobed in a cool or cold room. The goose-flesh is less distinctly seen when the skin, after having been exposed to cold, is suddenly acted upon by intense heat, although it is even then perceptible. That the contraction of the skin is not sudden, but is gradually increasing and culminating, can be most clearly witnessed in the skin of the scrotum when contracting in consequence of either of the above irritations. There is no doubt that the contraction is effected in the same way on all parts of the body, but on those provided with small muscular elements this shrinkage is not as readily perceptible.

This motor disturbance is nearly always effected with a sensation of slight shivering (horripilation) which quite evidently is to be traced to a nervous cause. External irritations acting on the cutaneous surface are conducted to the centre which excites the finest nerve filaments and produces contraction. Rapid alternation of heat and cold most readily permits us to observe a succession of contraction and relaxation, and this alternation ceases only when there is a sort of balancing of the irritations. The correctness of this observation can be best verified by dipping a hand alternately into hot and cold water; the contractions of the cutaneous muscles continue until their activity is exhausted.

Besides heat and cold, sensory impressions are followed by contractions, and one need not belong to the category of nervous individuals to be attacked by cutis anserina in consequence of piercing tones, scratching of the nail on rough surfaces, etc. The same may be said of moral impressions; who does not shiver under the sudden influence of a great terror? On such occasions we do not generally observe whether "our flesh

creeps," but the feeling of shivering or terror does not pass without a like motor disturbance.

Among the causes of disease leading to the same alterations we might enumerate the pyrexial affections which, at times beginning with a more or less intense rigor, are followed by a general contraction of the cutaneous muscles. All the influences named act in a reflex manner, and are always rendered possible through the instrumentality of the central nervous system. Patients suffering from central affections, in whom the conduction from the centre to the periphery, or the reverse, is interrupted or diminished, show none of the above-named conditions.

Outside of the above-named conditions of contraction or spasm, the motor disturbances of the skin offer no important changes. In them, the muscular contraction is associated with that of the vessels, and subsequent displacement of the blood toward the interior of the body, and it is this sudden influence which causes the feeling of shivering; but when the molecular activity of the nerves becomes altered, we find altogether different sensations, the various forms of which we have already discussed in detail in treating of the disturbances of sensibility.

## A N O M A L I E S

IN THE

### GROWTH AND COLOR OF THE HAIR.

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#### ON EXPERIMENTS RELATIVE TO THE GENERAL ETIOLOGY OF ANOMALIES IN THE GROWTH OF THE HAIR.

OF acknowledged importance in the etiology of anomalies in the growth of hair are, besides the inherited tendency, general disturbances of nutrition.

The injurious influence of unsuitable alimentation on the growth of hair may be demonstrated by Magendie's experiment, according to which dogs fed exclusively on cheese, and others fed on hard-boiled eggs, became weak and emaciated and lost their hair.

In more recent times, there is a progressive increase in the domain of those forms of alopecia in the causation of which trophoneurotic influences are at work, although very little has been done experimentally in this direction.

A very noteworthy experimental observation has been recently published by Brown-Séquard. He noticed that the offspring of guinea-pigs in which he had divided the sciatic nerve became epileptic, and whenever the epilepsy began to improve, the hair fell from the region of the epileptogenic zone on the head and neck.

Furthermore, Eulenburg observed falling of the hair from the posterior region in rabbits after chemical irritation of the sciatic nerve.

In my experiments on rabbits, the operation was always done on the nerve of one side, but both limbs were depilated. In no case was there even a temporary cessation of hair production on the operated side; on the contrary, in some of the animals the growth of hair proceeded even more rapidly on this than on the healthy side. The irregular manner in which the subsequent growth took place was conspicuous. Within the depilated territory supplied by the injured nerve, there appeared, a short time after the