ANALYSIS OF ONE THOUSAND CASES OF AFFECTIONS OF THE SKIN.

I. Deformities (anomalies of embryonal and trophic origin, and secondary acquired and artificial malformation), 21 per cent.

A. Redundancies, $8\frac{1}{2}$ per cent.

1. Simple diffuse hypertrophies, of the skin as a whole (pachydermia, dermatolysis), or of individual tissues (ichthyosis, keratosis pilaris, hypertrichosis, lentigo, telangiectasis, adenoma sebaceum, cutis elastica, etc.), $4\frac{1}{2}$ per cent.

2. Nævi (nævus verrucosus, pilosus, pigmentosus, sebaceus, vasculosus, etc.), 3 per cent.

3. Benign tumors (fibroma molluscum, keloid, lipoma, angioma, lymphangioma, myoma, neuroma, etc.), 1 per cent.

B. Defects, $7\frac{1}{2}$ per cent.

1. Simple defects or atrophies (congenital absence, atrophía senilis, albinismus, leucoderma, canities, alopecia, rugæ, etc.), 7 per cent.

2. Qualitative atrophies and dystrophies (fatty, granular, vitreous and colloid degeneration, xanthoma, myxœdema, scleroderma, morphœa, dystrophia cutis, etc.), $\frac{1}{2}$ per cent.

C. Secondary and artificial deformities (cicatrices, striæ atrophicæ, pigmentations, tattoo-marks, coal-and powder-marks, stains, argyria, melasma from pregnancy, arsenic, malaria, etc.), $2\frac{1}{2}$ per cent.

D. Functional anomalies (livedo, hyperæmia, hyperidrosis, seborrhœa, comedo, xerosis, anæsthesia, etc.), $2\frac{1}{2}$ per cent.

II. Injuries (acute dermatitides, angio-neuroses, rashes and surgical affections, etc.) 38 per cent.

A. Cause external, $26\frac{1}{2}$ per cent.

1. Cause inanimate (lesions of mechanical, chemical and thermal origin), $9\frac{1}{2}$ per cent.

2. Cause animate (cutaneous suppurations and initial lesions of specific inoculable diseases), 17 per cent.

B. Cause internal, $11\frac{1}{2}$ per cent.

1. Reflex source (pruritus, urticaria, various erythematous, papular and vesicular eruptions), $4\frac{1}{2}$ per cent.

2. Toxæmic source (exanthemata, drug-eruptions, herpes iris, erythema multiforme, pemphigus, purpura, pityriasis rosea, etc.), $5\frac{1}{2}$ per cent.

3. Neuritic source (herpes zoster and analogous forms), 1 per cent.

4. Hidrotic source (sudamina, lichen tropicus, etc.), $\frac{1}{2}$ per cent.

III. Diseases proper, 41 per cent.

A. Local origin (parasitic and professional eruptions), 13 per cent.

1. Occupation dermatosis (corns, callus, professional eczemas, etc.), $1\frac{1}{2}$ per cent.

2. Parasitic diseases (scabies, pediculosis, tinea trichophytina, favus, pityriasis versicolor, molluscum contagiosum, verruca vulgaris, verruca acuminata, verruca necrogenica, etc.), $11\frac{1}{2}$ per cent.

B. Cutaneous phenomena of general chronic infectious diseases (syphilis, tuberculosis, lepra, mycosis fungoides, frambœsia, rhinoscleroma, sarcoma, carcinoma, xeroderma pigmentosum, elephantiasis Arabum), 8 per cent.

C. Diseases at present unclassifiable, 20 per cent.

1. Eczema (eczema infantile, capitis, manuum et pedum, cruris, flexurarum, orificiorum, senile, etc.), 11 per cent.

2. Diseases essentially of the follicles of the skin

(acne juvenilis, acne rosacea, acne cachecticorum, acne varioliformis, sycosis, eczema seborrhoicum, dysidrosis), $6\frac{1}{2}$ per cent.

3. All other diseases (psoriasis, lichen planus, prurigo, pityriasis rubra, exfoliative dermatitis, etc.), $2\frac{1}{2}$ per cent.

RESUME.

Deformities, 21 per cent.; injuries of local origin, $26\frac{1}{2}$ per cent.; injuries of internal origin, $11\frac{1}{2}$ per cent.; diseases of local origin, 13 per cent.; diseases general in character, 8 per cent.; diseases of complex or unknown etiology, 20 per cent.

122 Euclid Ave.

THE INFLUENCE OF THE NERVOUS SYSTEM IN CERTAIN DISTURBANCES OF THE SKIN.

Read before the Section of Dermatology and Syphilography, at the Forty-third annual meeting of the American Medical Association, held at Detroit, Mich., June, 1892.

BY A. RAVOGLI, M.D.,
OF CINCINNATI, OHIO.

There is no other organ of the human body where the alterations of the nervous system presiding the nutrition of the tissues produce such an apparent effect than the skin, which externally located accessible to the eye, easily shows its disturbances. The nutrition of the skin like the other organs is entirely subordinate to a certain nervous filament which regulate the tonus of the blood vessels called therefore, vaso-motor nerves. The troubles of the nutritive process of the skin clearly show the disease of the nervous element which is connected with the affected region of the skin, and they are not only the etiologic moment of the disturbance of the skin, but truly they are the effective causes. The arteries and veins are subjected to change their calibre not only in a passive way, following by the inelasticity the pressure of the blood, but also actively by the efficiency of their muscular fibers. The vascular muscles belonging to the organic system are exclusively under the control of the vaso-motor nerves, which are principally supplied by the sympathetic nerve from the whole extension of the spina and also by some portion of the basis of the brain. It is well known the experiment, that when one of these nerves is cut through, the temperature of the part of the body under its influence is augmented, the arteries get swollen and the pressure of the blood is increased. On the contrary a galvanic current applied on the same nerve produces constriction in the calibre of the arteries and consequently diminution of the temperature. These facts show that the influence of the nerves on the blood-vessels is persistent and through them the muscles of the vessels are continually maintained in an active tension.

In the arteries the contractibility is much more developed than in the veins, but in the small veins and in the capillaries by lack of muscular fibers the changes in their calibre are only passive. The organic contractibility of the arteries is not in relation with their pulsation, and in consequence their contractive power is the regulator of the pressure of the blood.

The vaso-motor nerves therefore control the nutrition of the different organs by increasing or decreasing supply of the blood, according to the energy and to the activity of the organ.

The action of the vaso-motor nerves on the muscular fibres of the blood vessels explains a large number of affections of the skin which are revealed with inflammatory symptoms and changes in its nutrition functions. These affections have nothing to do with the real inflammations of the skin and in the most of the cases they are the result of some kind of trouble in the general system; very often are the result of an irritation or poisonous substance, acting upon the centers of the vaso-motor nerves. Exanthemes and many erythematous eruptions belong to this class and Auspitz called them angioneurotic eruptions. It is not this kind of skin affections, which I proposed to consider as an argument of my remarks, but I wish to speak of some disturbances in the nutritive functions of the skin, which are revealed by intrinsic alterations of its histological elements.

There is no doubt that the nerves regulating the circulation and presiding to the nutrition of the skin, have a great connection with the sensitive nerves, as often the trophoneurotic disturbances are consequence of irritation of the sensitive nervous fibres, or they are accompanied by alterations of their sensibility.

In the most of the practical cases we find that the lesions of the skin are accompanied with symptoms having reference to the nervous center. Miss V. B., of Cincinnati, a young lady twenty-two years old, for six months noticed a peculiar eruption on her body. She is a brunette, rather tall, of a good complexion, regularly menstruated, in apparent good health. When four years old she began to suffer with corea which lasted for several years. She was over with this disease, and at the age of twelve she was affected with epileptic attacks, which often repeated from two to three times a week. The epileptic attacks subsided, but it remains still now attacks of dizziness and cephalalgia which at times are repeated. The eruption consists of spots, maculæ, from the size of a dollar to that of the palm of the hand of white ivory color in the middle, surrounded by edges uniformly pinkish red. The white of the spots presents all characters of a scar, the skin cannot be pinched between the fingers, being slightly hard. The pinkish red edged are not elevated on the level of the skin, have no inflammatory symptoms, neither are accompanied by any pain or itching sensation. One spot was seated on the right gluteal region of the size of the palm of the hand, oblong, proceeding toward the hip joint. Another spot was seated on the abdomen; it begun from the right iliac region, running down to the genitals in oblique direction. Another spot, round, of the size of a dollar, was located on the middle of left thigh in its anterior region.

The young lady has no pain, no itching sensation; she complains of a kind of a numb feeling around the spots. The sense of touch on those spots is somewhat diminished. When a pin is applied on the mentioned atrophic spots, she feels the contact of the pin, but she is unable to distinguish if it is a round or sharp instrument. In the same way applying both points of a compass at a distance of one inch on the spots, she cannot say if there are two points or if there is only one, or if it is only a round instrument. Seen lately, the spots show no change, with the exception of the reddish hue of the edges, which is somewhat diminished.

This is a case of *liodermia neuritica*, glanzhaut, glossy skin, recently described as *striæ* or *maculæ atrophicæ*. Descriptions of this affection were given from Cantani,¹ Feré et Quermonne,² Touton,³ Beuhwald,⁴ Bradshaw,⁵ Troisier,⁶ Bouchard,⁷ Wilks,⁸ Sheperd,⁹ and Ohmann-Dumesnil.¹⁰ Nearly all the authors agree on this point that the origin of the *striæ* or *maculæ atrophicæ*, must be found in a trophoneurotic disturbance. Sheperd and Ohmann-Dumesnil referred to a case of *liodermia* consecutive to typhus and the last believes the cause of the disturbance of the skin to be the depriment action of the severe disease.

In my case it cannot be denied the nervous disease, as the lady first suffered with corea, then with epilepsy. Furthermore, the alteration of sensibility was very pronounced as shown by the numbness of the sense of touch in the affected regions of the skin. It was not allowed to me to make microscopical investigations of the abnormal skin; there is, however, no doubt that the whole affection is the result of a disturbance of the nutrition of the connective tissue of the corium causing that peculiar atrophy by defect in the action of the trophic nerves.

Not less interesting I find the atrophy of the pigment *leucodermia*, which I found accompanied too, with affections of the nervous system. Not long ago a lady, Mrs. A. T., thirty-nine years old, rather in poor health, asked to be relieved from white spots, which she noticed on her face and on her body. The lady was of dark complexion, dark hair, very delicate and nervous, and the mucous membranes of her mouth showed her anæmic condition. Her appetite was usually not very good, and her bowels rather constive. The menstruation was scarce and accompanied with pain. She had been at several times under treatment for melancholic attacks. Often she has hysteric spasms. In this last time she noticed a white spot on her chin, on the left side, consisting of three maculæ coalescent together, each one of the size of a quarter of a dollar, from the left corner of the mouth descending toward the neck. The natural dark complexion of the lady made a great contrast with the white color of the spots. Other irregular spots could be seen on her neck, on her chest, and on her arms and hands. Of course the spots were accompanied by no symptoms whatever, no itching, no pain, no desquamation of any kind, but in those affected regions there was a great diminution of sensibility. A degree of analgesia could be detected on her fingers, a sharp needle could not produce any sensation more than something touching. The two points of a compass applied on her arm at a distance of over one inch, were not noticeable at all as two points, but they gave only the sensation of a blunt instrument touching the skin. This shows that the sense of touch was somewhat benumbed by a great diminution of sensibility in the sensitive nerves.

According to Jacob Halpern¹¹ the regions of the human skin abundantly furnished with pigment show that its granules are mostly contained in the

¹ H Morgagni, 1881.

² Progrès Médical, 1881.

³ Deutsche Med. Wochenschrift, 1886.

⁴ Vierteljahresschrift für Derm. and Syph., 1883.

⁵ Brit. Med. Journal, 1888.

⁶ Bulletin de la Soc. Médicale des Hopiteaux, 1888.

⁷ Bulletin de la Société de Chirurgie de Paris, 1886.

⁸ Guys Hospital Reports, 1861.

⁹ Journal of Cutan. and Genito-Urin. Dis., 1891.

¹⁰ Monatshefte für Pract. Dermatologie, 1891.

¹¹ Ueber das Verhalten des Pigmentes in der Oberhaut des Menschen. Monatshefte für Pract. Derm., 1892.

deepest layers of the rete malpighi, and there are ramified ameoboid cells which are connected with the blood vessels and the nerves. The pigment in the white race consists in small granules of yellowish dark color surrounding these ramified cells. No pigment granules are found free into the layers of the epidermis without accompanying these cells which supply the pigment. This observation affords us the explanation that when these ramified cells remain without nutrition, their protoplasm is reabsorbed and they can not supply pigment granules any more, the pigment is reabsorbed by the cells of the rete and disappears. Pigment is nothing else than the result of a chromatopoeitic functions of these ameoboid cells, which take the blood corpuscles or their contents, changing it into pigment which is equally distributed in the layers of the epidermis.

In the appearance of the white spots of the leucoderma, we can see some relation with the distribution of the nerves corresponding to the affected region. The neuropathic origin of leucoderma can be maintained by some analogy with lepra. In some cases of this disease we find white spots on the neck and on the limbs, and in the centre of the white spots the sensibility is remarkably diminished. Lepra affecting so conspicuously the nervous system, cannot leave any doubt that the affected nerves are the cause of the disappearing of the pigment in the corresponding regions of the skin, by the disturbed action on the blood vessels.

Another form of disturbance of the skin which I met with, and which I found connected with nervous disorders, is scleroderma. A German girl eight years old, E. S., when an infant suffered with pneumonia, cholera infantum, and her skin was affected with eczema, from which she recovered. About four years ago she began to be very nervous and restless; she could not sleep, cried without any reason. At times she was suffering with neuralgic pains in her legs and arms, and at times a severe itching sensation caused her to scratch and wound herself with the finger-nails. The parents remarked that her legs were getting thinner and the skin below the knees and calves was so hard and inelastic that the girl could walk only with great difficulty. The same changes they remarked in her arms and hands, until the girl could not move, her limbs being perfectly stiff. Itching sensations troubled the poor creature to such an extent that she could not have an hour of sound sleep.

When I saw the girl she was rather well developed, her face was looking well, showing only some freckles around her nose and cheeks. The hair rather abundant, of light chestnut hue. Nothing was to be remarked on her neck, and the body was sufficiently developed. The arms were very thin and the skin was so hard that arms and hands could not be moved. The skin had a yellowish dirty color resembling parchment from the deltoid region to the fingers of the hand. The elbow was stiff and could not be bent. It was not possible to raise a fold of the skin, and it seemed that bones, muscles and skin had formed just one mass like a piece of wood.

The epidermis showed deep furrows, and especially on the hands around the wrists were fissures from the breaking of the skin by trying to bend her hands. No movement at all was allowed to the fingers, which remained stiff in semi-flexion. The pigment was unequally distributed on the affected surface, so that

the color was various, resembling a marble stone.

A large spot of sclerotic skin was on her abdomen, beginning from the left hypochondrium and extending like a bandage to the genitals, which were involved too. Both legs were in the same condition, more the right, which had lost its shape; it was stiff from the hip-joint to the toes. The left leg was affected to the knee, the thigh being nearly free. The feet like the hands were hard and stiff, with some ragades around the calf by trying to walk, which was difficult and painful. The sensibility of the affected skin was greatly diminished, to such a point of anæsthesia that a needle stuck into the skin could scarcely produce any sensation. However, the girl was suffering with itching sensations, and her skin showed some excoriations, the result of her scratching. The skin was dry and the perspiration was never remarked on her body, and was only noticeable on the head and on the face. The temperature of her body was only 97° to $97\frac{2}{3}^{\circ}$, taken under the axilla. In this case there was no doubt that not only the skin was deeply affected, but also the muscles had suffered a certain degree of atrophy, as the limbs were deformed and movements were prevented. Changes in the muscular fibres in cases of scleroderma were already found from Thibierge,¹² who expressed the opinion that the affection of the skin is only a consequence of the affection of the muscles. In our case, however, it shows just the contrary; the atrophy of the muscles seems to have been only consecutive to the affection of the skin.

I am sorry to have not been able to show any microscopical investigation of the case, on account of the objection to have cut a piece of the skin. The disease seems to have its seat in the connective tissue elements of the corium and of the subcutaneous tissue. The panniculus adiposus is completely gone by atrophy of the fatty cells, and the elastic fibers are largely increased. The blood-vessels and the lymph-spaces are compressed by the accumulation of the connective tissue elements, which produce also the atrophy of the glands of the skin.

Here we have three affections of the skin which show intimate connection with disorders of the nervous system. The first case of maculæ atrophicæ in a lady who was affected with chorea and later with epilepsy; the second case atrophy of the pigment in a lady affected with hysteria and melancholia; the third case scleroderma in a girl extremely nervous affected with neuralgic pains. I do not refer to anything new in this argument, but I want only to strengthen what has been already observed. Dühring¹³ refers to a case of atrophy of the skin in consequence of alteration of the nutrition in progressive muscular atrophy. Weir Mitchell¹⁴ referred already to cases of injuries of the nerves which caused atrophy of the skin and of the subcutaneous tissue. Robinson¹⁵ is of the opinion that glossy skin, which is a consequence of common causes, can be also produced by inflicted wounds. McCall Anderson¹⁶ refers to a case of atrophy of the skin which followed the injury of the supraorbital nerve, and supports the irritation of the sympathetic of the neck to be the cause of the atrophy of the half of the face. Brun-

¹² Rev. de Medecine, No. 4. 1890.

¹³ Treatise on Diseases of the Skin, 1881.

¹⁴ Injuries of the Nerves and their Consequences, 1870.

¹⁵ A Manual of Dermatology, 1884.

¹⁶ Treatise of Diseases of the Skin, 1887.

¹⁷ Physiologie und Pathol. des Sympathischen Nerven Systeme, 1879.

ner¹⁷ found atrophy of the skin of the left side of the face in an epileptic lady.

After having considered the condition of the nervous system of our patients, it appears that the cause of these disturbances of the skin, have to be found in that system. The action of the nerves is to regulate the functions of the blood vessels. The alterations seem to be especially on the sympathetic which presides over the vegetative functions, but we can not absolutely deny that the nervous centers are implicated in the production of these affections. Fibers from the brain and from the spine go through the ganglia which form the origin of the sympathetic, and make it an independent system. The fibers coming out of the ganglia are not only motor, but they are also of a sensitive nature. This is plainly emphasized when we see that an irritation applied on an organ under the control of the sympathetic causes to increase the movements of the organ supplied with that group of nerves. The ganglia are not organs of movement, but they are organs where the reflex action is accomplished without any knowledge of the brain. Any stimulus applied to the sensitive fibers, causes a reflex movement through the ganglia, the sensation remaining in it without causing any feeling. But when the stimulus exceeds the normal point it becomes an irritation, its effect does not remain limited to the ganglion, but is carried to the spine and to the brain, thus producing sensation. Many disturbances of the nutrition of the skin generally happen without producing sensation, remaining strictly limited in the jurisdiction of the sympathetic. This we see when the disturbance is not very intense, as in our case of leucoderma or lioderma, but when the results of the affection are deeper like in scleroderma, then some sensation is aroused, like in one case which was accompanied with neuralgic pains and itching sensations.

There is no doubt that some of these affections, by their topographic distribution on the skin, reminds the ramifications of the nerves laying underneath, or better, they follow the lines of division of the cutaneous nerves as drawn by Voight. In nevus line ris, ichthyosis cornea, hystrix, we find the disposition of the disease pursue the cause of the underlying nerves. In one case of ichthyosis hystrix which came under my observation in a boy eight years old, the disease so closely followed the course of the sciatic and crural nerves in these regions of the skin that it looked as if somebody had drawn lines with the pencil. In many cases of anomalies of the pigment as in nevi pigmentarii, either congenital or acquired short time after birth, we see the lines wonderfully follow the ramification of the nerves of the affected region. Kaposi refers to two cases of nævi verrucosi, where the verruæ were seated precisely on the course of the hyschiatic nerve.

Neumann¹⁸ referred to a case of nervous nevus, where the pigment hypertrophy and the warts were distributed from the gluteal region to the toes of the foot in perfect correspondence with the nervous ramifications of the leg. The disposition however, of these maculæ or hypertrophies of the epidermis reminds that of the underlying nerves. According to Philipson,¹⁹ the skin disturbances follow rather the cutaneous nerves maintaining the lines of Voight. The difference of direction between some lines of altered

skin and the direction of the nerves, would be explained by the physical growth of the body, the affection remaining of the size as it was in infancy.

The nerves which control the nutrition of the skin are not distinct from others, but are in connection with motor and sensory filaments. In consequence of this fact, Baerensprung considered alterations of the skin of this kind the result of a disturbance of a spinal nerve. The same we can say in the nævi-vascularis, when the spots represent an area which recalls the nerve of the region. Nevus vascularis of one side of the face shows that originally in the embryo the trigeminus was affected and the dilatation of the capillary blood vessels was the result.

In our first case we have two areas of the skin affected with atrophy in an oblong form. It begun with a small spot of a reddish violet color, which gradually got white and atrophic in the center, showing the intensity of the color in the periphery. The intense redness was the result of stasis, due to the diminished tonus of the blood vessels, the vasomotor nerves having lost their control.

In the second case we have atrophy of the pigment following the course of the maxillary nerve inferior of one side and on the neck, breast, arm and hands of both sides.

In the third case we remarked a deep alteration of the skin affecting the corium and the subcutaneous tissue and muscles, due to the condition of nutrition of the limbs and on body.

All the three affections came recently, slowly progressing in persons affected with nervous diseases, and accompanied with nervous symptoms as anæsthesia, analgesia, hyperæsthesia.

I believe that lioderma, leucoderma and scleroderma, although different affections have great similarity between themselves. They are affections which attain people suffering with an altered condition of the general nervous system. They are the result of an affection of the nerves either central or peripheric. In one word they are the result of an alteration of nutrition of the skin by altered conditions of the trophoneurotic nerves. In conclusion I would say that the difference between leucoderma, lioderma and scleroderma is only of degree, produced by lack of nutrition affecting in the first the ameboid cells of the malpighi layer which furnishes the granules of the pigment, in the second affecting the connective tissue of the superficial layer of the corium, and finally in the third involving the connective tissue of the corium and of the subcutaneous tissue.

MEDICINAL PLASTERS.

BY JOHN V. SHOEMAKER, A.M., M.D.,

PROFESSOR OF MATERICA MEDICA, PHARMACOLOGY, THERAPEUTICS AND CLINICAL MEDICINE, AND CLINICAL PROFESSOR OF DISEASES OF THE SKIN IN THE MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA; PHYSICIAN TO THE MEDICO-CHIRURGICAL HOSPITAL.

In most diseases involving the skin both constitutional and local treatment is needed in order to effect a cure or improvement. Topical remedies may be applied in different forms and it is often a question whether a powder, a solution, an ointment, paste or plaster is calculated to afford most speedy relief. Plasters possess certain advantages which render them appropriate means of dealing with some varieties of skin diseases. They are especially adapted to the treatment of chronic and localized conditions. In

¹⁸ Oesterr. Jahrbuch f. Pædiatrik, 1877.

¹⁹ Monatshelte für Pract. Dermatologie. 1890.