of the ground upon which we stand. Indeed, it seems to me that to insist upon any single factor as playing an exclusive rôle is to take too narrow a view of the situation. We should, for instance, recognize, 1, the importance of the varying grades of subnutrition encountered; 2, the chemical factor, the precise nature of which can not usually be determined, but the existence of which, as a factor in morbid hemogenesis, is substantiated by a mass of clinical and experimental evidence, quite conclusive in character, and includes, in its broader relations, not only the products of digestion unmodified by the physiologic functions of entero-hepatic structures and bacterial ptomains, but the leucomains of normal or morbid metabolism, and the products of bacterial growth on all mucous surfaces or parenchymatous structures; and last, but perhaps not least, because of its greater permanence, that intangible something, the expression of a hereditary or acquired vice, which determines what has been called the vulnerability of the tissue or organ. Such, it appears to me, is the broad view which clinical medicine should take of these cases, and in calling attention to the rôle of gastro-enteric disease, with a report of a couple of selected cases, I would especially emphasize the importance of not losing sight of the other factors to which attention has been called.

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THE ANATOMIC FACTOR IN THE PRODUCTION OF BALDNESS.

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Cunningham, in opening his chapter on the dissection of the scalp, says: "Strictly speaking, the term 'scalp' should be restricted to the soft parts which cover the vault of the cranium above the level of the temporal ridges and the superior curved line of the occipital bone"; whilst Treves states it is convenient to consider the term "scalp" as limited to the structures formed by the union of the first three layers, viz., the skin, the subcutaneous fatty tissue or superficial fascia, and the occipito-frontalis muscle and its epicranial aponeurosis.

How strikingly does the scalp area of Cunningham correspond with the area of baldness as seen in most individuals the subjects of this condition! But still more precisely and accurately does the area of baldness correspond to the area of the epicranial aponeurosis, a structure in which there are no muscular fibers nor yet any underlying muscular fibers between it and the bone. That the production of baldness has an anatomic factor, I propose now to discuss more in detail.

The skin of the scalp is intimately connected with the underlying epicranial aponeurosis by the superficial fascia. In fact these two structures are so firmly attached by dense fibrous bands that it is a difficult undertaking for a dissector to essay their separation. Among these meshes lie the fatty tissue, the nerves and the vascular structures before they break up to supply the skin. Similar superficial fascia is found in the palms of the hands and the soles of the feet; and it may be significant to note that of the three regions of the body supplied with this dense superficial fascia, the overlying skin in the two latter is altogether destitute of hairs, whilst the third, the scalp area, very often becomes similarly destitute in later life.

Any one who takes the trouble to examine and observe closely must be struck by the fact that baldness occurs on the top of the head and rarely if ever extends

below the temporal ridges latterly, or even down to the superior curved lines of the occipital bone posteriorly. It will be noticed also that baldness extends lower in the middle line behind than it does an inch or so on either side of the middle line posteriorly. This, of course, corresponds to the fact that there are no muscular fibers in the middle of the occipito-frontalis muscle at its attachment to, or rather origin from, the external occipital protuberance and the adjacent parts of the superior curved lines.

The skin of the scalp, therefore, overlying the epicranial aponeurosis, has no underlying muscles to exercise it, and has only to depend upon the action of the occipito-frontalis muscle to which it is closely adherent, and only moves when that muscle is put into action; and how often that muscle is moved in twenty-four hours, I leave any one to conjecture. In no other region of the body is there such an extensive area of skin which does not receive adequate exercise either through underlying or adjacent muscles.

The skin of the area of baldness is abundantly supplied with blood; the scalp is very vascular. There is nothing anatomic or mechanical to interfere with or retard the arterial supply, unless it be the proverbial constriction of the hat assumed by the male portion of the population. As far as this acts upon the arterial trunks, it is infinitesimal, but upon the return flow in the lymphatics and veins the hat has its influence.

The lymphatics and veins drain the area of baldness in five different directions. On either side of the middle line anteriorly, there is a lymphatic stream down the forehead past the nose and over the face to the submaxillary glands. Latterly these vessels lead to the lymphatic parotid glands; posteriorly, into the post-auricular and suboccipital glands. The fifth is along the path of the emissary veins through the parietal foramina when present in the parietal bones, into the superior longitudinal sinus. I have recently taken the trouble to examine a number of parietal bones. In a great many of these the parietal foramen, which when present is generally situated about an inch or so anterior to the posterior superior angle on either side of the sagittal suture, was absent altogether; and it was in the smaller and thinner bones that it was present. It would be, perhaps, an interesting point to know whether this parietal foramen with its emissary vein, were more constant in women than in men, as its presence must add materially to the draining facilities of this region.

Whilst the skin of this area of baldness and consequently the hair follicles may have a good nourishing supply directed towards them, the functions of the hair papillæ may be stunted by the slow return flow through the veins and lymphatics. What is there to accelerate that flow? Nothing but the inactivity of the epicranial aponeurosis, and, perhaps, to a slight extent, gravity. There is no active muscular exercise in the part whatever, to hurry along the waste products and the deoxygenized blood in the vessels. These structures being superficial and more compressible than the arteries, their compression by the rim of the hat will further retard their flow. In their passage outwards from the center of the dome, the rate of flow is dependent entirely on the gradual fall, that is, to gravity. When they approach the borders of the dome, however, the fall is precipitate. Here, also, the influence of underlying muscular structures comes into play. One can easily demonstrate this by placing the hand on the back of the head and noting the extent of skin exercised in the nodding

and turning movements of the neck. So on the sides. The temporal regions have their skin abundantly exercised through the action of the temporal muscles. Very often a tuft of hair remains for a long time over the forehead when the falling-out process is advanced to a great degree behind it. That may be due to the part being well drained on the border of the dome, which is also to some extent exercised by the anterior muscular fibers of the occipito-frontalis muscle, which fibers extend well up to the hair line in front.

Baldness does not prevail in the female sex to anything like the extent it does in the male. Very few women become bald even in far-advanced life. This is generally put down to the fact that they give more attention to their hair, dressing and combing it night and morning; and their light headgear. The scalp in them is well exercised by the combing, plaiting and throwing from side to side, movements which impart a good deal of exercise to the scalp. Women suffer from dandruff equally with men. If dandruff be the prime cause of baldness in men, why are its destructive effects not equally seen in women? Men comb and brush their hair in a minute, probably once, or twice or thrice daily. There is no exercise to the scalp in these maneuvers of a minute's duration. During the hours of sleep the dorsal or either lateral decubitus is assumed. This may have a slight effect in hastening onward the return flow from the roots of the hairs in the bald area. In the expressions of surprise, etc., when the anterior fibers of the occipito-frontalis produces wrinkling of the skin of the forehead, the exercise to the skin is beneficial to the hair over the forehead. But how often are these expressions depicted on the human countenance?—especially as age advances, and more control is exercised over the muscles of expression. If there be no anatomic factor in the production of baldness, how is it that dermatologists order massage in the treatment of calvities and the falling-out process? How is it that when the scalp has become bound down and absorption of the fat in the superficial fascia has taken place that no measure of relief can avail? Simply because the hide-bound skin can not be exercised. In scleroderma, even, the hair frequently falls out in the part affected. Massage is the substitution for exercise, and its object is to get rid of the choking and damming back in the veins and lymphatics.

The foregoing being correct, the way to treatment is pointed out. Prevention through massage-exercise is nine points in the law of treatment. This should be begun in early life, at the time when the youth is gradually developing into the more sober man, when his occipito-frontalis muscle has become more and more subordinated to his will. Massage should be performed the same way as in other regions, first freeing the vessels farthest from the seat of trouble and gradually approaching the center. It should be done at night as well as in the morning, particularly at night, as gravity has little or comparatively little chance through the day. If the scalps of men received as much exercise as the scalps of women, there should be on the vaults of their craniums a luxuriant growth of hair. The American Indian is said by Holder never to grow bald. The reason lies in their comparatively long hair. The close-cropped Indian of the Reserve is not wholly exempt.

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OCULAR LESIONS ASSOCIATED WITH CONSTITUTIONAL DIATHESIS.

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In calling your attention to this subject the writer does not desire to create the impression that he has anything purely original to offer, but to call your attention to the fact that the human body is too much of an entity for any one system to be exclusively deranged, while others remain healthy; actions and reactions are the two great rules of organic life. Functional waves of reflex influences are always sweeping to and fro through the body and peripheral irritations of every kind, and every phase of organic disturbances may excite a reflex that will influence the actions and perhaps the nutrition of the eye and its appendages.

Sir Thomas Watson said: "We find in the eye more satisfactory and plain illustrations of the general facts and doctrines of pathology than in any other single organ of the body; certain changes in the eye are known to accompany certain diseases of the brain and spinal cord, and also certain lesions of organs more remote, which are also the expression of general and constitutional disease."

In reflex neurosis it is very difficult to tell from what part of the organism proceeds the hidden mischief, so that unless an oculist is well versed in every branch of medicine, his field of investigations will be limited. The association of ocular lesion with constitutional diseases is determined by anatomical connections, partly by histological peculiarities of the texture severally involved, but chiefly by their embryological origin and relationship. As you are aware, nearly all the tissues of the body are represented in the eye and its appendages, and are liable to all the pathological changes which affect like tissues in the body; therefore our thoughts should not be centralized on the eye itself to the exclusion of other consideration, for the ocular notation may be only a sign and symptom of the changes that are produced in the animal economy. For instance, the eye lesion in diabetes and Bright's disease is more diagnostic than prognostic.

Twedy, in his paper on "Constitutional Diseases of the Eye in the Light of Embryology," points out many highly suggestive and interesting facts in this connection. The embryological origin of the various structures of the eye from the layers of the blastoderm is represented schematically. He thus shows that there is a histological and physiological relationship between the epiblastic elements of the eye and the epiblastic tissues of the rest of the body, and between the mesoblastic tissues of the eye and all other mesoblastic tissues. He further states: "The pathological relationship is none the less intimate and exact. The cutaneous eruptions of strumous children; the eczemas, herpes, impetigos, etc., are concomitants of the phlyctenulæ of the epithelial layers of the cornea. In ophthalmic herpes the corneal change is likewise epiblastic. Syphilis, on the other hand, is a disease of mesoblastic texture, and ocular syphilitic affections are found to be of the mesoblastic origin. The notched, pegged and stunted teeth of inherited syphilis are not faults of the epiblastic enamel, but of the mesoblastic dental papillæ. Though epiblastic portions of the eye may become secondarily involved, the lesion begins in the mesoblastic structures. These and other analogies are valuable not only for diagnostic purposes, but also for therapeutic uses. Certain drugs have a special