mixed with blood without destroying the corpuscles, though strong solutions are intensely irritating." By bathing the surface of the lids with this solution the vitality of the conjunctiva is increased rather than decreased; any deposit of the solution becoming entangled between the lips of the wounds is absorbed and the tendency to promote quick union is encouraged. The edges of the wounds occasioned by the puncture are brought in coaptation, and the healing process is not so greatly disturbed. In this way the cicatricial tissue is lessened and the conjunctiva may more nearly regain its normal condition.

After the first few hours following the operation, when the healing process is established by quick union, or by some of the other processes of repair, mild antiseptic irrigation may be used to advantage, relieving the dangers of contamination from without. The employment of antiseptic solutions in eye surgery is not to be deprecated, but the nature of the solution and the modifying circumstances and conditions should always be taken into account in their application.

There is a new connective-tissue element formed by the inflammatory infiltration, which shrinks more or less in the trachomatous process. This should not be confounded with the cicatrix due to operative measures.

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URIC ACID.

A FACTOR IN THE CAUSATION OF CHOROIDITIS.

Read before the Fourth Annual Meeting of the Western Ophthalmologic and Otolaryngologic Association, held at New Orleans, La., Feb. 10 and 11, 1899.

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In all my reading and research in this direction I have been greatly impressed with the dearth of written knowledge upon this subject, and so concluded to present to this Society a short paper embodying my experience with this class of cases. Perhaps there is no place in the entire country where the oculist will see so many cases of choroiditis, iritis, etc., as may be seen at Hot Springs, Ark., where patients come from every quarter of the globe. It has been a routine practice in every case of choroiditis to first begin treatment with mercury and the iodids in conjunction with the hot baths. A few years ago, after repeated failures to obtain the anticipated results from such treatment, it occurred to me that there must be some common pathologic factor other than syphilis to cause this disease, and I began to investigate closely and changed my method of treatment, especially in those obscure cases where no positive diagnosis of syphilis could be made, and as a result, my efforts toward a cure were in many cases rewarded by a clearing up of the trouble by the use of the salicylates, after the patient had been given, either by myself or the gentleman who had referred the patient to me, a thorough course of antisyphilitic treatment without effect. If we will bear in mind the close anatomic relationship between the choroid and the iris, will we be surprised to know that if uric acid, causes a disturbance in the latter, why it should not in the former?

The second tunic of the eye is formed by the choroid behind, and the iris and ciliary processes in front. The choroid is the vascular and pigmentary tunic of the eyeball, investing the posterior five-sixths of the globe and extending as far forward as the iris. The middle layer consists of an exceedingly fine capillary plexus formed by the short ciliary vessels. About half an inch behind the cornea its meshes become larger and are continuous with those of the ciliary process. The ciliary processes are formed by the plaiting and folding inward of the middle and internal layers of the choroids at its anterior margin, and are received between corresponding foldings of the suspensory ligaments of the lens, thus establishing a communication between the choroid and inner tunic of the eye, the larger processes being attached at their periphery to the ciliary ligament, and with the middle and inner layers of the choroid, their anterior surface is turned toward the back of the iris, with the circumference of which it is continuous.

The capillary network of the choroid is the finest and closest in the body. Its total area is at least 800 times greater than that of the short posterior ciliaries from which they arise. In consequence of the law that the velocity of a current in a tube is inversely to its lumen, the velocity of their capillary current must be very many times less than that of the short posterior ciliary artery. The choroid presents another peculiar feature: its vessels are arranged in superimposed layers, progressively diminishing in size from without inward. In the profound chronic toxemias produced by uric acid the earliest manifestations of the long series of necrobiotic changes are found in the arterioles and capillaries. Here the blood-current is slower than elsewhere, and the blood, charged with toxic substances, is in contact with the delicate structure of these minute vessels much longer than in the larger arteries and veins. Haig, in his admirable work on uric acid claims that, "If uric acid affects the arteries in the way and to the extent to which it does, it must influence for good or evil, the function, nutrition and structure of every tissue and organ of the body, from the skin outside to the most central fibers of the spinal cord and brain within." Free uric acid in the blood does cause contraction of the arterioles, and by this interference with interstitial circulation becomes the prime factor in pathologic changes in every tissue and organ in the body.

Mr. Standford Morton¹ relates that he "saw stasis or thrombosis in the vessels of the retina in one or two cases taking place during an attack of megrim, and there is every probability that these troubles were due to uric acid," and if this can take place in the retina, why not in the choroid? Haig sums up one of his brilliant theses as follows: "If my premises are good and my deductions sound, and if uric acid really influences the circulation to the extent which I have been led to believe it does, it follows that uric acid really dominates the function, nutrition and structures of the human body to an extent which has never yet been dreamed of in our philosophy; and in place of affecting the structure of a few comparatively insignificant fibrous tissues in which it is found after death, it may really direct the development, life history and final decay and dissolution of every tissue, from the most important nerve centers and the most active glands to the matrix of the nails and the structure of the skin and hair."

In many cases we have associated with choroiditis

of this form typic symptoms of rheumatic iritis also; again, we have the one without the other complication, and upon close observation we find that if the patient has the explosion of uric acid in other parts of the body, the choroid and iris are comparatively free from this trouble until these symptoms have subsided, when we have a recurrent attack of choroiditis, or iritis, or both at the same time. It is not necessarily the case that a well-defined history of rheumatism may be found in order to make the proper diagnosis of the case. If we can discover even any remote symptoms of uric acid after we have eliminated other causes by exclusion, it will guide us in obtaining the line of treatment necessary to perfect a cure.

It frequently happens that no assignable cause can be found for the condition existing in the choroid, the patient does not give a history of rheumatism, yet if uric acid be found and everything else has been done to eradicate this condition of the choroid, and the salicylates are at last administered, the inflammatory process subsides like magic. The changes in the fundus of the eye may be entirely confined to one eye, or may affect both, and may be evenly distributed all over the fundus, or confined to a limited area. The uveal pigment and bacillary of the overlying retina may become affected also, and hence the term "chorio-retinitis" is often a more suitable name than simple choroiditis. Patches of atrophy appear as rounded areas from one-fourth to one disc's diameter, or a little larger, bounded by a ring of black pigment, the entire surface within the ring is white, or bluish white and glistening, and shows no trace of choroidal vessels or pigment. The appearance of the fundus between the atrophic spots is usually normal. In other places we may find similar patches showing very small splashes of pigment on the exposed sclerotic; in other patches again are seen the choroidal vessels unchanged, or with partial or complete obliteration of the blood-streams, from endarteritis, appearing as white or yellowish white strands. At the diseased spots the outer layers of the retina are always more or less infiltrated with the pigment. These foci of inflammation, just as in any other form of the disease, leave the atrophic spots, and thereby interfere with perfect vision. We find on examination of the urine from day to day an increase of uric acid excreted, under the influence of the salicylates, hot baths and a vegetarian diet. It is not necessary to probably weary you with the line of treatment in detail for this class of patients, as any drug which will increase the solubility of uric acid will eliminate the disease through the excretory organs.

I can not refrain, however, from extolling the benefits to be derived from the hot-water treatment as given at the Hot Springs of Arkansas, in conjunction with other remedies, as in many cases this will alone bring about a decided improvement without the aid of the salicylates. This assertion is founded upon facts. I will close by admonishing you to carefully examine the urine in these puzzling cases of choroiditis to find the relative proportion of uric acid to urea, and if you do not find it to be 1 to 33 or thereabout it will show that the uric acid is not being properly eliminated, and in all probability is the cause of the choroiditis.

¹ Ophthalmic Review, March, 1890.

LA GRIPPE.

ITS MANIFESTATIONS, COMPLICATIONS, AND TREATMENT.

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The most popular subject of discussion by the laity and by the profession as well, is undoubtedly la grippe. The multiform manifestations or forms it assumes, together with the serious complications and sequelæ which are so frequent in the present epidemic, render it a fruitful and interesting theme for discussion. While some excellent physicians are rather sceptic and aver that the diagnosis is far too frequent, that there are comparatively few cases of genuine "grippe," it seems to the writer that the characteristic symptoms are so clear that the intelligent observer need not err. The intensity of the catarrhal symptoms, peculiar pains, great prostration, and tardy convalescence form a typical clinical picture.

While the catarrhal symptoms are usually limited to the respiratory mucous membrane, they are not always so, and in the writer's experience in this epidemic, the invasion of the mucous membrane of the digestive tract has been quite frequent. Not alone mucous membrane, but a part or all of the cerebro-spinal axis has been invaded. So constantly has it seemed to expend its force on one or the other of these localities, that excellent authority has been pleased to classify it into "The Abdominal Form," "Head Type," and "Spinal Type." However, in some cases, it has seemed that none of these organs or systems has escaped, though one may be the most seriously affected.

In many cases the so-called complications are simply an extension and aggravation of the catarrhal or inflammatory condition; thus an extension of the usual inflammatory condition of the throat through the Eustachian tube produces middle-ear complication; the bronchitis may extend and become capillary, or even a pneumonitis may result. So we believe that in the so-called abdominal form with severe gastro-enteric catarrh, it may extend by *contiguity* and inaugurate a general peritonitis.

It is only upon this theory that we can explain the supervention of a severe general peritonitis in a case under our care, now happily terminating in convalescence.

A little girl of 11 years, previously healthy, never seriously ill before, of German parentage, was taken ill February 10, with unmistakable symptoms of "grippe," which seemed to include all the several forms, almost every organ or tissue in the body being affected. When I first saw her, twenty-four hours after the illness began, she presented the following alarming symptoms: high temperature, extreme restlessness, wild delirium, constant emesis, involuntary, frequent and copious discharge of feces and urine. She coughed and had complained of pain in the chest. Prescribed calomel in small and frequent doses with bismuth, also potassium bromid and chloral. Vomiting ceased and she rested, but on the third or fourth day she developed symptoms of peritonitis, abdominal pain, hardness and some tympanites, etc. Prescribed calomel, twenty grains divided into four powders, one every three hours, also the usual turpentin stupes, morphia to quiet pain, etc. The next day, finding no improvement, but rather aggravated symptoms—green vomit, bowels not moved—I gave a very gloomy prognosis, and at the family's request called a consultant, who concurred in diagnosis and prognosis and had nothing more to suggest.

However, on my return in the evening I decided, in view of the great mortality of these cases by the routine treatment, to try the local application of a mustard poultice, and gave internally hydrozone diluted in frequent doses, alternating with doses of glycozone, for their germicidal, antiseptic and healing

Let us have a Department of Public Health!