A WORD CONCERNING THE ETIOLOGICAL RELATIONSHIP OF EPIDEMIC INFLUENZA TO CHRONIC GLAUCOMA.

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That "the prime etiological factor of glaucoma is constitutional," to quote the title of one of Dr. Richey's papers on this subject, has been maintained from time to time and certain systemic diseases have been given the rôle of exciting agents, particularly rheumatism and gout, the latter affection including the uric acid diathesis in the widest acceptation of the term. Some observers believe that influenza may play a similar part. For example, Zentmayer and Posey'* in their clinical study of 167 cases of glaucoma simplex, found an increased frequency of this disease during the decade in which influenza manifested itself with unusual severity, and suggested that this increased frequency is due to the deleterious influence of this affection. In my own analysis of 63 cases of chronic glaucoma with special reference to the field of vision influenza* was thought to have exercised an exciting influence 7 times.

The case which follows is recorded because it furnishes a suggestion as to the manner in which epidemic influenza may cause the ophthalmoscopic appearances to which we give the name chronic glaucoma, and why, therefore, during seasons when this disease is prevalent non-inflammatory glaucoma seems to be more frequent.

Mrs. A., aged 56, consulted me on the 26th of April, 1900, and gave the following history: Six weeks prior to her visit she had an unusually severe attack of influenza, which confined her to her bed for ten days. Convalescence had set in, when she went out, the day being somewhat windy, and suffered a relapse. With this relapse there was almost complete blindness of the right eye, associated with pain on movement and pressure. She was treated very judiciously by her fam-

* Archives of Ophthalmology, 1895, Vol. XXIV, p. 378.
* Annals of Ophthalmology, 1899, Vol. VIII,

ily physician until she was able to make the trip to this city for ophthalmic advice.

Examination.—The patient was a healthy looking woman, perhaps slightly anaemic, with an excellent family and personal history, and except for some lassitude following her illness and a certain amount of apprehension on account of the blindness of the right eye, in good general condition without signs of organic disease.

R. E. V.—light perception. The disc was nearly round, the outer and lower half markedly decolored, the arteries small and the veins somewhat full by contrast and slightly beaded. The field of vision was as follows: Outward, above and somewhat to the nasal side a 2 cm. square of white was perceived, while the lower and outer half of the field was dark.

L. E. V.—6-6 with +.2, and with suitable presbyopic correction 0.50 pp. 33 cm. The disc was normal in appearance, the arteries were perhaps a little smaller than they naturally should be, but otherwise presented no changes.

The diagnosis of retro-bulbar neuritis as the result of grippe was not hard to make. The treatment consisted of counter-irritation on the temple, profuse pilocarpine sweats, followed by iodide of sodium and later by nitroglycerine and strychnine.

Two weeks later the patient returned with the statement that the vision of the right eye was better, but that some dimness of sight was beginning in the left eye. Examination revealed the vision of R. E. to be D.+60 at 60 cm., the card being held somewhat eccentrically. The vision of the left eye was 6-15. Ophthalmoscopically the right disc appeared slightly better in color and a note is made of a beginning shallow excavation. In the left eye the veins were full, fuller than at the last examination and somewhat beaded, while the arteries were small. A shallow excavation, or perhaps more properly physiological cup, occupied the center of the disc. The fields of vision were as follows: That of the right side was almost full in the periphery with a large irregular scotoma in the center; that of the left side was nearly full in the periphery; the red and blue fields were normal, but there was green achromatopsia, and four days later with the vision practically the same a central color scotoma could be detected.

After five weeks of treatment, which did not vary from that already detailed, the vision of the right eye was 4-100, and of the left eye with

proper correction, namely, +2+.50c axis 180 6-5, the field of vision being normal and the relative scotoma and disturbance of color sense having disappeared. The scotoma upon the right side was now nearly central, being 15 degrees outward, 20 degrees upward, 30 degrees inward and 15 degrees downward.

One month later the conditions were about the same, the scotoma being a little less pronounced.

Four months later vision of O. D. was 6-30 with difficulty; the anterior chamber was shallow and the T. normal. Ophthalmoscopically the following conditions were noted: Nearly round disc, its edge +.1.5 D.; large excavation to lamina, shelving outward, but not complete to nasal edge, the scleral ring being broadened on the temporal side. The vessels, not pulsating, approached a little to the nasal side. The color of the disc was distinctly gray. The visual field was as follows: Slight contraction up and in and to the temporal side, elsewhere full; moderate contraction of the red field; oval central scotoma, complete for colors, incomplete for white.

In other words, the ophthalmoscopic appearances at the present time are not unlike those which one frequently sees when the diagnosis is somewhat difficult between a shallow glaucomatous cup and the cupping of optic nerve atrophy. If, as in this case, in a little less than seven months the surface of the optic disc could change from one which presented the ordinary phenomena of a slight physiological excavation at its center to one which contained an almost complete shallow cup, distinctly pathological, although not with abrupt edges and complete crowding of the vessels to the nasal side, as one sees in true glaucoma, it is not inconceivable that in the months to follow the process may proceed still further and the true glaucoma excavation become manifest. Undoubtedly the original lesion in this case was that which characterizes the so-called retro-bulbar neuritis, and which first attacks the axis of the nerve and then extends further on and involves the neighboring fibers until the cut in the field is produced which was evident at the first examination. Under the influence of medication the peripheral fibers recover, in part at least, their function, while the central fibers fail to meet with so fortunate an experience. Next atrophy and shrinkage take place and excavation begins, again first in the center, which widens as the adjoining fibers become involved in the process. If to this should be added the phenomena of increased tension, which as yet I have not

been able to detect, and the cup should later assume the appearances which we are wont to describe as typical of rise in intraocular tension, then the clinical picture would be complete and the case could be taken from the category of excavation with atrophy and placed with that of so-called chronic glaucoma. That some form of neuritis antedates the development of the glaucomatous cup is of course well known. Thus, for example, Brailey and Edmunds have stated that neuritis precedes increased tension, a statement which is verified by a number of other observers, the entire literature of the subject having been carefully analyzed by Stirling.* Therefore it does not seem improbable that the axial neuritis which is occasioned so frequently by epidemic influenza, more frequently, I think, than perhaps by any other disease, may be the starting point of a glaucomatous excavation of the nerve-head.

* Annals of Ophthalmology and Otology, Vol. V, 1896, p. 1026.