to move for twenty-four hours. A good result was obtained.

DR. S. D. RISLEY, Philadelphia—I arise to suggest the importance of vascular disease as an etiologic factor in these cases of intraocular hemorrhage following operations which open the eyeball. I have published the report of one case in which this unfortunate accident occurred; a Morgagnian cataract in an aged woman with extensive atheroma and marked disturbance of the circulation. Immediately following the corneal section, the lens was forcibly extruded and followed at once by profuse loss of fluid vitreous. In a moment a stream of bright red blood issued from the wound, so profuse as to saturate the pillow. The patient suffered intensely from occipital pain. It is probable that the diseased intraocular blood-vessels ruptured when the support of the normal ocular tension was removed by the corneal section. A few months later she died suddenly from intracranial apoplexy. The presence of general atheroma is always an added source of danger in operations which lower the ocular tension suddenly.

DR. D. S. REYNOLDS, Louisville, Ky.—I want to add one more case: a man of 48, in apparently good health, came to me with immature cataract in both eyes. I did a preliminary iridectomy on the eye which had the most mature cataract, for the reason that there was plus tension in both eyes. Less than a half hour after the iridectomy was done I was sent for, and found him in great pain. The dressings were saturated with blood, the side of his face covered and the bedclothing stained. Examination showed that a stream of blood was spurting out of the wound in regular pulsations. I enucleated the eye the next day, making an engagement to operate on the other eye when it became impossible to count fingers. Thirty days afterward he fell from his horse, dead from apoplexy.

SOME OCULAR MANIFESTATIONS OF ARTERIOSCLEROSIS.*

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I have selected from private practice five cases which fairly represent phases of ocular affection occurring in conjunction with degenerative changes in the circulatory system. I would state by way of perface that each one of the five individuals in question enjoyed a degree of good health and activity, and was characterized by an excellence of physique far beyond the average for their age, none having been under 55, and in every instance any evidence of other ailment save that of the circulatory system was practically lacking. Signs of morbid changes in the walls of the blood-vessels, however, with the attendant modifications in the size and action of the heart, were uniformly present and palpable. It may be stated, moreover, that these patients, to whom the drawings refer, have since been under observation for periods ranging in extent from about seven months to about three years, coming down to the present; that none has suffered any sort of damage to the fellow eye—in other words, the abnormality has been strictly monolateral, and so far as recent reports indicate, the defective eye has, in every case, become quiet, though in only one has the vision in the worse eye improved, viz., Case 3, from 20/200 to 20/50+.

CASE 1.—The case of Mrs. Z., aged 64, already reported,[1] is again cited because of the striking ophthalmoscopic picture herewith exhibited. I think I have never seen another fundus wherein the sinuosity of the veins was so extreme.

CASE 2.—Mrs. W., aged 55, a Jewess, was always well excepting a facial paralysis fifteen years before. She came for examination of the eyes and to be fitted with glasses, Jan. 14, 1898.

R. V.=20/70—; 20/20 with + 2 sph.

L. V. = 20/200; 20/40—with + 2 cyl. ax 75°.

The ophthalmoscope revealed change in the retinal vessels, suggestive of atheroma and arteriosclerosis, together with a few minute orange dots in the choroids. I ordered glasses as above September 20. She returned because for a day or two she had been unable to see with the right eye.

R. V. = 20/200, uncertainly.

L. V. = 20/40; with glasses as above.

The ophthalmoscope showed embolus or thrombosis of the right lower temporal artery just where it gives off the first good-sized branch, terminating in the lower macular region, with hemorrhages and white exudates over the affected area. Under potassium iodid, massage, cathartics, etc., these soon began to disappear, and vision had risen to 20/70, when, about November 25, fresh hemorrhages ensued at the same site. I advised the patient to go to Hot Springs, Ark., for the baths and massage, and to continue the iodid in moderate doses.

I next saw her on March 9, 1899, she having in the meantime been to Hot Springs, where she remained one month. The retinal hemorrhages and exudations were all gone, only degenerative changes showing where they had been.

R. V. = 20/50.

Her last visit was May 22, when the second sketch[2] was made. The right eye was now: V. = 20/50+. The first sketch was made at the time of the second hemorrhage, about November 25. The field herewith presented was taken Oct. 12, 1898.

CASE 3.—Martin G., aged 63, a German, bookkeeper, came to be fitted with glasses, May 11, 1898. Thirty-six years ago he had syphilis, and was treated at his home in Bavaria, by an army surgeon, and soon cured, having been in good health ever since. Two years ago he had partial loss of function, beginning in the thumb and rapidly extending to the whole arm. This soon disappeared. Occasionally he has a prickling arise in the tongue and then in the right side of the nose and lips.

R. V.=10/200; 20/30—with+4s⌒+ 105c. ax. 50°.

L. V. = 10/200; 20/40 with —5 (antimetropia).

He had been wearing for his work, O. D. +2s, O. S.—4, and hence doing it all with the left eye, as the right eye required the additional of +3D for near vision The ophthalmoscope showed great meandering of the retinal vessels, and plentiful changes in their walls, much more pronounced in the left—myopic—eye.

I ordered spectacles as above, with +3D added, in segments, for near vision. After wearing the glasses for twelve days he came back to say that he had suddenly lost the sight of the left—myopic—eye. The ophthalmoscope revealed a tremendous neuroretinitis of that eye, with innumerable hemorrhages, etc. After the lapse of three weeks more, iridochoroiditis supervened in this eye, then secondary glaucoma on June 21, as a result of the mydriatic, perhaps. This was treated with eserin. By July 5 the eye had become quiet and the T normal. V.=perception of light. Media clear—fundus essentially unchanged. About this time the patient was persuaded by his friends to try osteopathy. January 6, 1899, I dropped him a line to call, and, after a few days, he did. The eyes were then quiet: T of left normal, but its lens had become opaque.

CASE 4.—Mrs. C., aged 67, came for consultation and examination Nov. 1, 1898. Nearly two years previously she had run against a towel-rack, the rounded end of which struck just above the right eyebrow. The blow was not severe enough to cause any contusion nor ecchymosis, but from that time she was conscious of some

*Presented to the Section on Ophthalmology, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

[1] Ophthal. Record (1st Chicago number).

[2] Illustrations omitted by author's request.

disturbance of vision in that eye, and had constant inclination to brush something away, although it was not until nearly a year after this accident that, in rubbing the left eye, she discovered that the sight of the right had failed. R. V. = 20/200; 20/100 with + 2.

L. V. = 20/200; 20/20 with + 2.25.

The lower field of the left was almost lacking. The ophthalmoscopic examination disclosed in the right fundus the conditions here depicted: Up and out from the optic disc along larger vessel one could see what must have been the vortex, or rallying point, as it were, of the whole trouble, and one could be allowed to assume that here, as a result of the concussion, a retinal vessel was broken. The right fundus was normal, excepting that the appearances of the retinal vessels told of degeneration of their walls, being very similar to those shown in the lower half of the drawing.

CASE 5.—The cause of the ocular disturbance was extraocular in this case: Mrs. H., aged 63. Two weeks before coming to me she went into a dark room and fell over a trunk, alighting on her hands, and not striking her head, and was considerably shaken up. Soon after she seemed to experience confusion in looking at objects, and at the end of a week observed that she saw double. She had been suffering considerable pain in and around the right eye, much worse at night. I found complete paralysis of the right abducens; no other paralysis; right exophthalmus, engorgement of temporal conjunctival veins, and edema of right lower lid.

R. V. = 20/200; 20/20— with + 4.

L. V. = 20/200; 20/20 with + 4.

The ophthalmoscope showed right choked disc, left sinuous and irregular vessels, minute choroidal spots of bright orange color, situated chiefly outward. I ordered the above glasses for constant wear, potassium iodid in augmenting doses and faradism and massage to be applied to and about the right eye. By the middle of the following December, the eye had made complete recovery, not a trace of the recent disturbances being left. Here the probable cause was hemorrhage externally in the orbit precipitated by the fall.

The object sought in calling attention to these cases is to emphasize certain facts with regard to the eyes of elderly individuals distinguished by well-marked symptoms of atheroma and arteriosclerosis—facts already known, it is true, but insufficiently studied and weighed, so it would seem, by the average practitioner of ophthalmology. The signs of advanced disease of the general circulatory system are comparatively easy of recognition, and the ophthalmoscope affords singular facility for the detection of analogous conditions within the eye. With it we are brought in closer touch with the status of the circulatory apparatus than is possible by any other means in any other part of the body. And it is in the retina, which is the part most accessible to this instrument, that a relatively very slight accident to the vascular machine can do more harm than could obtain elsewhere in the entire anatomy. Aside from the great delicacy of its construction, and the importance of its function, it is peculiar in that its vessels are so spread out and isolated, so nearly helpless in the matter of effecting anastomoses for the sake of surmounting such obstacles, and which are readily established almost everywhere else in the physical economy. For these reasons it were well and wise to encourage not only universal familiarity with all those things which are known to be tokens of a morbid state of the vascular system, but also to inaugurate widespread investigation with the view of finding new ones.

Did time permit, it would be a pleasure to review the literature of this theme, and to describe the diverse features by which the presence of the malady is revealed. Among the oculists who have done good work along this line are Goldzieher, Wegenmann, Sattler and Rhadmann in Germany; Gunn and Williamson in Great Britain, and Hasket Derby and Harry Friedenwald, in America. Thorough acquaintance with the teachings relative to this subject, together with the demonstrations furnished by our various clientéles, might enable us as specialists to prevent many a grave disaster, not alone where the precious organ of vision, but where life itself, is concerned. With equal felicity we might, by timely counsel, avert an expulsive hemorrhage after the extraction of a cataract, a seizure of acute glaucoma, or a fatal attack of cerebral apoplexy. The field of possibilities here offered is, indeed, a rich one—possibilities in the way of diagnosis, of prognosis and prophylaxis, in our dealings with victims of the disorders under discussion.

A few words as to their general conduct in the avoidance of all unnecessary strains, shocks and jars, a few hints as to their diet and other habits of body, supplemented by the judicious administration of those selections from the materia medica which will serve to further our ends, and we may do wonders. So precarious is their state that it is enough to make one hesitate before handling them according to one's accustomed routine of practice, and to deplore the fact that greater light for his path, in the management of them, is not available. As above stated, I suspected that the use of atropin in Case 3 resulted in secondary glaucoma, and I have even wondered if the separate correction of the refractive errors in Cases 2 and 3, thus inducing an unwonted exertion on the part of these anisometropic eyes, may not have been a factor in the precipitation of the serious retinal lesions.

DISCUSSION.

DR. G. E. DE SCHWEINITZ, Philadelphia, presented drawings to supplement those exhibited by the Doctor, prepared to illustrate some of the points made. These were drawn from patients having arteriosclerosis, but who were unconscious of their serious condition.

DR. C. A. VEASEY, Philadelphia—The ocular manifestations of this disease have been so thoroughly considered to-day that little remains to be said, except in the way of corroboration. Quite recently I have had the opportunity to study an unusually well-marked case, the patient being a man 32 years of age. Many of the patients are elderly people in whom we might expect such changes, but quite frequently the conditions are also seen in those of less mature age. A drawing made of my case, and here presented, shows exceedingly well all the changes so ably pointed out. The patient simply complained of being unable to see well, but the ophthalmoscopic examination showed marked hemorrhages throughout the fundus, two or three spots of atrophy (the sites of former hemorrhages), and at the points where the arteries crossed the veins the latter could seldom be seen on account of the thickness of the arterial coats. Beyond these points the veins were decidedly tortuous, and most of the hemorrhages had occurred in the neighborhood of these tortuous veins. In one of the superior veins the condition of constriction to which attention was called in a recent paper by Dr. Harry Friedenwald is especially well marked; when it is crossed by the artery its size is reduced to that of a mere thread, but afterward it regains its normal caliber.

I have also had the opportunity of studying, within the past two years, a case of marked arteriosclerosis of the retinal vessels in a man of 60, without any general symptoms of the disease. In the first case to which I have referred the urine and blood examinations were normal, but the vessels rolled under the fingers like whip-cords, and there was a double heart murmur; in the last case there were no symptoms other than those seen in the eye.

It is my belief that in all of these cases there should be a very very grave prognosis.