embolism, gives the subject great importance.

The limits of this paper do not permit any discussion of the subjects of intracranial hæmorrhage and thrombosis and embolism. Miliary aneurism, as has been noted, is very infrequent in the vessels of the cord, and as non-traumatic hæmorrhage into the cord is a comparatively rare event, this fact might be adduced to strengthen the position taken, that these small aneurisms are always, practically, the precursors of hæmorrhage in the brain. Of course there are other reasons why hæmorrhages into the cord are infrequent, as the length, size and mode of distribution of the spinal vessels. It is doubtful whether any symptoms can be ascribed to changes in the blood-vessels of the cord, unless we include anæmia and hyperæmia, which can hardly be said to be conditions which can be recognized clinically.

The purely theoretical suggestion mentioned in the first part of this paper, that perhaps atheroma of the vessels of the cord may be a factor in the production of sclerotic degeneration of the fibres in the manner indicated, may, if confirmed by any facts, prove useful in clearing up our somewhat indistinct ideas of the production of these lesions.

There are, as we have seen, no very pathognomonic symptoms of arterio sclerosis of the vessels of the central nervous system. The diagnosis must rest upon the general symptoms that have been outlined. When a patient presents certain of these symptoms, and shows sclerosis of the vessels that can be examined, we can pronounce with some degree of certainty upon the probable condition of the arteries of the brain. The ophthalmoscope sometimes, though by no means always, shows us a condition of sclerosis in atheroma of the vessels of the retina. Raehlmann found changes in the vessels in forty-four out of ninety cases examined, or nearly fifty per cent. He describes a certain hazy appearance of the vessels, looking as if a thin veil were stretched over them. He noted dilatations and constrictions in the vessels and in two cases aneurism, and found the veins affected also, in twenty-six per cent. of the cases.

One can say little as to treatment, other than the general rules that are laid down for the treatment of the general condition. It is necessary for patients who have a high degree of arterio-sclerosis to avoid violent sudden exertion for obvious reasons. At the same time systematic, regular exercise in the open air, with hill climbing in suitable cases, is of great value. Avoidance of excessive amounts of liquids is certainly an important point. Large quantities of water cannot but be injurious, by overfilling, or at least greatly increasing the total quantity of fluid in vessels that are already embarrassed. The diet should be light and nutritious. An occasional saline purge is beneficial, such as concentrated

magnesia sulph. The bromides are often of decided value in quieting the cerebral circulation, as are also warm baths. Nitro-glycerine is frequently of value in these cases, especially when we have a sudden raising of arterial tension and the danger of intracranial hæmorrhage imminent. In these acute conditions an ice cap to the head is valuable.

The above imperfect sketch of arterio-sclerosis of the central nervous system will, I trust, aid in directing attention to the importance of the subject, and show the necessity of more careful clinical work to make the picture complete.

g E. Townsend St.

REPORT ON THE OPHTHALMOSCOPIC EXAMINATION OF DR. PRESTON'S CASES OF ARTERIO-SCLEROSIS.

BY HARRY FRIEDENWALD, M.D.,
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As a preface to the short report of the result of the ophthalmoscopic examination of Dr. Preston's cases, I should like to state that it is but recently that attention has been attracted to those changes of the retinal arteries as are found in general arterio-sclerosis. A few years ago Ole Bull¹ described several cases of disease in the retinal arteries, and showed how this was the cause of symptoms frequently ascribed to embolism. Raehlmann² made an exceedingly careful study of the relation between general and retinal arterio sclerosis, besides collecting a few scattered cases in literature. He examined ninety cases of general arterio-sclerosis and found that in most cases the retinal arteries were narrow and tortuous, that 19 per cent. showed whitish margins along the retinal arteries, that 21 per cent. presented localized narrowings in their course, but that retinal aneurisms are very rare. Confining ourselves to these signs of arterial disease without considering the changes in the veins which he likewise frequently found, we must admit that the results are very remarkable. They are, indeed, surprising, if you remember that in all works on ophthalmoscopy such changes are not considered throughout; 6 per cent. referred to; that in the very latest, that of Gowers, we find the statement referring to general atheroma, that "in cases in which it is well marked elsewhere" he has "often looked for appearances in the retina suggesting its existence but without success." Prof. Hirschberg recently published the results of very careful ophthalmoscopic examinations of fifty persons between the ages of 60 and 80 years. Besides the many other "senile changes" he finds that 46 per cent. of the persons examined showed changes in the retinal arteries; 44 per

¹ Ninth International Medical Congress Reports, Washington, Vol. III, p. 663.

² Zeitschr. f. Klin. Med., H. 5 and 6, Vol. XVI.

cent. of the persons examined showed variations in the caliber of the arteries at different points in their course; 2 per cent. showed whitish lines on their margins.

Before going further, it would be well to explain more definitely what is meant by these terms. The healthy retinal artery is perfectly transparent. What we see is the blood column within it. When the walls of the arteries thicken at the expense of their inner caliber and the thickened portion remains as transparent as the healthy vessel—and this is commonly the case—we detect the change in the narrowing of the column of blood. This thickening may take place at localized points, causing the localized variations in the thickness of the blood column or throughout the course of the vessel. In the cases mentioned above, we must, therefore, remember that the terms refer only to the blood column, and that we infer from these the condition of the vessel, for instance, when Raehlmann describes "localized narrowings of the arteries," there are only localized narrowings of the blood column, and we infer from these that there are localized *thickenings of the walls of the vessel*. In those cases where "white lines are seen along the margins of the vessels," the wall of the vessel has lost part of its transparency, and reflects some light which is seen as the white lines. This depends upon a change in the substance of the vessel, or a deposit within it different from that in the transparent thickening mentioned above, and is much rarer.

My attention was first drawn to the localized narrowings (apparent!) of the retinal arteries in cases of optic nerve atrophy, and especially in those due to embolism of the central retinal artery, in which conditions they are much less uncommon than is ordinarily supposed. But their importance struck me when I saw them in a case of beginning *retinitis albuminurica* where the signs of inflammation were almost limited to but one eye, while the localized narrowings could be seen in the retinal arteries of both eyes.³ Since then I have paid more attention to this point and have found the changes not infrequently.

It was with great pleasure, therefore, that I undertook to examine the retinal arteries of Dr. Preston's cases. I must mention that some of the cases were in bed when I was at the asylum, and could not be examined sufficiently carefully with the ophthalmoscope to look for these minute changes. For this reason only twenty-nine cases were examined, or fifty-eight eyes. In eighteen of these eyes (in twelve patients) an ophthalmoscopic examination was rendered impossible by such impediments as cataract, corneal opacities, etc., and this reduced the number of retinæ examined to forty (in twenty-three patients).

Of these forty retinæ, nineteen presented decided local or general narrowing of the arteries with frequent tortuosity (twelve patients); ten presented moderate or slight changes of the same kind (seven patients); four presented whitish margins along the arteries (two patients); one presented a hæmorrhage on the papillæ; seven appeared thoroughly normal (five patients); two appeared thoroughly normal, while there were other extensive retinal changes. Besides these I noted in several cases senile retinal changes, in the characteristic little yellowish spots due to colloid degeneration of the lamina vitrea of the choroid.

The proportion of cases in which decided changes were found is so great that I am led to thoroughly accord with Raehlmann as to the frequency of these changes and their importance in diagnosis.

A KNOWLEDGE OR A TIME REQUIREMENT. A PLEA FOR A MORE RATIONAL SYSTEM OF MEDICAL LEGISLATION.

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The very general move in the direction of medical legislation, during the past year or so, indicates the urgent demand on the part of the profession, for the just and proper regulation of the practice of medicine. In addition it is significant of the increase in competition and of the growing metamorphosis of the art of medicine into the science of medicine, of which the precepts and teachings follow such fixed laws, that he who studies may learn.

THE NINETEENTH CENTURY.

Our nineteenth century is a wonderful one—the like of which has never been seen in the whole compass of earthly years. Born during the great struggle of freedom against tyranny and oppression, living through the downfall of the ancient superstition of the divine right of Kings, it is about to make its exit from a world whose democracy is stamped in every act, and whose parting requiem to the hoary century will be "Vox populi, vox Dei." The people—the Demos rule. Throughout this whole century an equalizing power has been exerted which has been so thoroughly engrafted upon the lives and actions of men, that it has become the spirit and temper of the age.

Such a condition must have a positive bearing upon our civilization and its effects may be concentrated in the one expression, competition. Fair, open competition is the life of our institutions, but when it begets exclusion, it becomes the very bane of their existence.

³ Prof. Hirschberg published this case in detail, *Centralblatt f. Augenh.* 1890, p. 206.