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AMAUROSIS AND AMBLYOPIA TREATED BY THE SUBCUTANEOUS INJECTION OF STRYCHNINE.

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THE subcutaneous injection of strychnine, for the relief of certain amaurotic and amblyopic affections, is one of the most important modern contributions to ophthalmic therapeutics.

With the introduction of the ophthalmoscope, the use of the term "amaurosis" became seriously restricted. Formerly applied to nearly every failure of vision, unconnected with a visible cause, it gave way to a scientific nomenclature as soon as all the portions of the eye-ball lying behind the crystalline could be seen and their changes realized. Affections of the optic nerve, choroid and retina began to be diagnosed and classified.

There still, however, remained a certain class of cases where failing vision occurred unaccompanied by any tangible organic change. Such affections, as well as those diseases of the optic nerve, characterized by whitening and atrophy, the whole coming under the head of amblyopia and amaurosis, long formed the opprobrium of ophthalmic science. Operative treatment and local applications were here, of course, out of place, while general treatment was, in many cases, of but slight value.

The discovery that strychnine, particularly when used in the shape of local injections, would exert a marked influence in many such cases, was hailed, at first, with a measure of incredulity. So hopeless had these affections been long considered, that a remedy which promised a lasting improvement, and which often exerted an almost instant and perceptible effect, was a long time in making its way into general confidence. So extravagant, too, were some of the claims at first set up for it, so various the diseases to which it was said to be applicable, and so few the reported failures, that sober practitioners, who used the remedy, at first without success, were often discouraged from subsequent trials.

My own experience was at first unfavorable. In case after case, I followed the indications and directions laid down by the advocates of the new remedy for its employment, without success and without even perceptible effect. The first case in which I was able to see an evident good effect was the first of those here reported. Encouraged thus to follow up the method, I have ended by giving it my fullest confidence, and by employing it very generally in these affections. It is not a panacea, it is not a specific. Those who look for instant action, or strikingly brilliant results will, in a large number of instances, meet

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with disappointment. But it will often succeed where other remedies fail, and often materially accelerate a cure in cases where all, save the most general remedies, were formerly deemed useless.

Within the limits of a brief article, and in a journal intended for the entire profession, it would be inexpedient to discuss the effect of strychnine on the normal eye, as demonstrated by a careful series of physiological experiments. Hippel has accomplished this task in his work on "The Effect of Strychnine on the Normal and Diseased Eye." And Nagel, in the "Treatment of Amblyopia and Amaurosis by Strychnine," has stated at length the cases in which he found its application of value. I would here simply call attention to one class of cases, in which the use of this remedy has seemed to me particularly indicated, namely, those designated under the name of "amblyopia ex abusu."

It has, for some time, been known that the long-continued, excessive use of alcohol or tobacco sometimes gives rise to a peculiar affection of vision. Its acuteness slowly and regularly diminishes. There is no contraction of the visual field, no break in its continuity, but distant and near objects grow gradually indistinct, the patient often using the expression that everything about him is enveloped in a gradually thickening mist. Glasses are found of no avail for distant objects, though convex lenses for a time sustain the failing powers of the eye for the near. But reading and writing finally become impossible. Ultimately, if the disease progresses, the patient is unable to guide himself about, and blindness may ensue. During all this time, there is no change in the external appearance of the eye. The ophthalmoscope alone reveals a change; at first, a degree of congestion of the optic nerve; towards the end, an atrophic degeneration of the same.

This is the true "amblyopia potatorum," or, more properly, alcohol not being its only cause, "amblyopia ex abusu." I have had the curiosity to look through my own records, in order to ascertain the comparative frequency of its occurrence. It occurred 52 times among 6,602 patients, about .8 per cent. In hospital practice, I am satisfied it occurs more frequently. Of my 52 cases, 16 proceeded from the abuse of tobacco alone, 5 from that of alcohol, 31 from both combined.

Those who have treated these cases previous to the introduction of strychnine injections will all agree as to the slowness with which improvement takes place. It is true that rigid abstinence from the use of the exciting cause, and the employment of tonics will generally arrest the progress of the affection. But gain is excessively slow, frequently, for months, almost imperceptible.

CASE I.—January 9, 1873, I first saw Mr. B., a tall, athletic man, who had always enjoyed excellent health. For a year or more, his vision had steadily decreased, a mist seeming to constantly surround him, and continually thicken. For some time past, reading and writing had had to be given up. Upon inquiring into his habits, I found that for years he had averaged, at least, three drinks of spirits and eight cigars a day.

The whole case presented the usual symptoms of amblyopia ex abusu. The optic nerve had passed the stage of congestion, but did not, as yet, show any marked whitening. Vessels very slightly diminished in calibre. Vision right $\frac{2}{3}\sigma$; left $\frac{2}{6}\sigma$.

[These fractions are readily appreciated by bearing in mind the fact

that the figures *below* the line denote the number of feet at which an average normal eye would make out a line of print, selected as the test-object, while the figures *above* the line denote the distance at which this line is made out in the present case. The fraction thus formed may be considered as expressing the vision of the patient. When the numerator and denominator are the same, the vision is normal.]

Entire abstinence from alcohol and tobacco was, of course, the first thing insisted on. A tonic was given, and blood taken from the temples by means of the Heurteloup leech. January 15th, there had been a little gain. Vision (V) right $\frac{20}{200}$; left $\frac{7}{20}$. One-fortieth of a grain of nitrate of strychnia was injected in the left temple. Very little improvement followed. The use of the Heurteloup was continued, and another strychnine injection subsequently made, but so little improvement followed that this treatment was given up.

Feb. 20th.—Patient was continuing rigid abstinence, and taking the elixir of the phosphates of iron, quinine and strychnine. V. right $\frac{20}{200}$; left $\frac{3}{20}$, no improvement having occurred for some weeks. The nerves looked decidedly whiter, and the vessels thinner. Mr. B. was haggard, had lost flesh and spirits, seemed nervous and distrait. He was oppressed in walking by a fear of falling. There was a tendency to sleep a large portion of the time. His hearing was less acute, and his memory impaired. April 5th, no change in health or vision. Atrophy of optic nerve more apparent. As a last resort, a thorough course of strychnine injections was proposed.

His vision was now much what it had been in February; right $\frac{20}{200}$; left $\frac{6}{200}$. Below are given the dates and amount of the strychnine injections, as also the improvement in vision, which at once began to occur.

Injections.	Vision.
April 7th, gr. $\frac{1}{40}$.	
" 9th, gr. $\frac{2}{10}$.	
" 12th, gr. $\frac{3}{40}$.	April 12th, right $\frac{20}{200}$; left $\frac{20}{200}$.
" 14th, gr. $\frac{1}{12}$.	
" 21st, gr. $\frac{3}{40}$.	
" 23d, gr. $\frac{1}{10}$.	" 23d, right $\frac{20}{200}$; left $\frac{20}{200}$.
" 26th gr. $\frac{1}{8}$.	
May 3d, gr. $\frac{1}{8}$.	
" 9th, gr. $\frac{1}{8}$.	
" 20th, gr. $\frac{1}{8}$.	May 20th, right $\frac{20}{200}$; left $\frac{20}{200}$.
" 29th, gr. $\frac{1}{40}$.	
June 19th, gr. $\frac{1}{4}$.	June 19th (had drank and smoked), right $\frac{20}{200}$; left $\frac{20}{200}$.
" 26th, gr. $\frac{1}{4}$.	June 26th, right $\frac{20}{200}$; left $\frac{20}{200}$.

The direct connection between the injections and the improvement is here most manifest. The right eye, it will be seen, was restored to very nearly normal vision. The general health had improved, and the patient resumed his business, once more able to read and write with ease.

CASE II.—Mr. R. aged 60, formerly a sea-captain, a thin, wiry man,

who had always enjoyed excellent health, had been for many years, "all his life," an excessive smoker. His average, as far back as he could remember, was about fifteen pipes a day. For three months, his vision had been failing, and he was now unable to read or keep his accounts.

Jan. 1, 1874.—There was deep congestion of each optic nerve. Vision of each eye, $\frac{2}{100}$. Visual fields normal.

Tobacco was ordered to be omitted, and the elixir of the phosphates of iron, quinine and strychnine given internally. At the end of a fortnight, there had been no change in vision. Injections of nitrate of strychnia were now made in either temple, alternately, as follows:—

Injections.	Vision.
Jan. 15th, gr. $\frac{1}{10}$.	
" 17th, gr. $\frac{2}{10}$.	Jan. 17th, $\frac{2}{10}$ each eye.
" 20th, gr. $\frac{3}{10}$.	" 20th, $\frac{3}{10}$ " "
" 23d, gr. $\frac{1}{12}$.	
" 31st, gr. $\frac{3}{10}$.	" 31st, $\frac{2}{10}$ " "
Feb. 2d, gr. $\frac{1}{10}$.	
" 6th, gr. $\frac{1}{8}$.	Feb. 6th, $\frac{3}{10}$ " "
" 13th, gr. $\frac{1}{8}$.	
" 18th, gr. $\frac{1}{8}$.	" 26th, $\frac{2}{10}$ " "

The effect of the injections was almost immediate. Thus the patient would speak of the street-signs as having "brightened up" when he left the office. The rapid progress made will be especially noted.

The next case is a well-marked instance of what used to be called "amaurosis."

CASE III.—Mrs. C., aged 34, had always enjoyed good sight and excellent health. Three years before coming to me, she had passed a season of great anxiety and exceeding fatigue, having lost several members of her family. Soon afterwards, she began to be subject to intermittent obscurations of vision, "something rising before her and leaving a blur that would last several minutes." This symptom occurred more and more frequently, and was accompanied by intense pain across forehead, and pain like a needle through eyes. One day, the vision of the right eye suddenly became very imperfect, and the eye itself was the seat of much pain.

May 17, 1874.—Eyes externally normal. Right, *sees moving hand (very dimly) in one foot*. Nerve whitish, vessels—especially arteries—attenuated. Left, vision $\frac{2}{100}$. Visual field much contracted in every direction. Has much difficulty in getting about at night. Left optic nerve whitish, vessels slightly diminished in calibre.

A powerful tonic was given, and strychnine injections at once commenced.

Injections.	Vision.
May 19th, gr. $\frac{1}{10}$.	
" 21st, gr. $\frac{1}{10}$.	
" 27th, gr. $\frac{3}{10}$.	
" 29th, gr. $\frac{1}{12}$.	May 29th, no change.
June 1st, gr. $\frac{3}{10}$.	
" 3d, gr. $\frac{1}{10}$.	June 3d, right $\frac{2}{100}$; left $\frac{2}{10}$.

June 5th, gr. $\frac{1}{8}$.

" 9th, gr. $\frac{1}{8}$.

" 15th, gr. $\frac{1}{8}$.

" 22d, gr. $\frac{1}{8}$.

" 29th, gr. $\frac{7}{16}$.

July 14th, gr. $\frac{1}{8}$.

June 13th, right $\frac{20}{80}$; left $\frac{7}{8}$.

" 19th, right $\frac{7}{8}$; left $\frac{20}{80}$.

June 26th, vision of each eye $\frac{20}{80}$.

July 14th, " " " " $\frac{20}{80}$.

Sept. 22.—Vision of right $\frac{20}{80}$; field contracted in all directions. Left, vision $\frac{20}{80}$; field very slightly contracted. *Each optic nerve is less white, and the vessels are larger.*

THE TREATMENT OF PERTUSSIS BY INHALATION.

By J. WINTHROP SPOONER, M.D., of Hingham.

IN the JOURNAL dated April 20, 1871, appeared an article by John J. Caldwell, M.D., of Brooklyn, N. Y., entitled "A New and Successful Treatment of Pertussis." The treatment recommended was the following:—

R. Fl. ext. belladonnæ, $\mathfrak{m}$ v. to x.;
Potass. bromid., $\mathfrak{S}$ i.;
Ammon. bromid., $\mathfrak{S}$ ij.;
Aquæ, $\mathfrak{z}$ ij. M.

Inhale one tablespoonful in the ordinary steam atomizer.

Several successful cases were reported, but since that date I have seen no report of cases treated in that way.

Feeling that we have in this method of treatment a great addition to the therapeutics of a disease often distressing, and sometimes fatal in its results, I have been led to publish a few cases of my own treated in a similar manner. I am in the habit of using a tablespoonful of the above mixture and filling up the glass of the atomizer with water.

CASE I.—April 1st. A boy of 14 has had the disease for two weeks. The cough has been severe and the whoop well marked. Vomits after nearly every meal. The next record is April 5th, which is as follows: Patient has been at the office daily and used the atomizer. His cough has been less since the first inhalation, and he has whooped but once. The vomiting has ceased, and there is present but a slight cough, which is not distressing.

CASES II. and III. were two children (brother and sister) aged 15 and 12. Well-marked symptoms of whooping cough had been present for two weeks. The same remedy was used for four days, under my supervision, with decided abatement of symptoms. As they were improving, I lent them a hand atomizer, which I afterwards understood they used only for a day or two. The cough lingered for several weeks in both cases, although the whoop was never well marked after the use of the atomizer. In fact, during the latter period, the disease seemed to be a simple bronchitis and nasal catarrh, the result of a series of colds, as the patients were very imprudent.

CASE IV.—A child of 3 years had a cough, with febrile symptoms for ten days. Yesterday, for the first time, had a decided whoop. Vomited every meal to-day. Face is swollen, eyes congested, and, this morning, lids adhered from excessive secretion. The atomizer was used twice daily. Improvement commenced at once. From that